AMERICAN ANNALS OF THE DEAF

Official Organ

Conference of Executives of American Schools for the Deaf
Convention of American Instructors of the Deaf

Edited by

IRVING S. FUSFELD

Under the Direction of

PERCIVAL HALL, of the District of Columbia, 1939
FRANK M. DRIGGS, of Utah, *ex officio*
MADISON J. LEE, of Kentucky, 1939
ELWOOD A. STEVENSON, of California, 1945
IGNATIUS BJORLEE, of Maryland, 1942
ALVIN E. POPE, of New Jersey, 1942
CLARENCE J. SETTLES, of Florida, 1945

Executive Committee of the Conference

MAY

1938

VOLUME 83 NUMBER 3

THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF

President.....
Vice President.....Mrs. [illegible]
Secretary.....Leonard M. [illegible]
Treasurer..Irving S. Fuarfield, District of Columbia
Chairman, Executive Committee.....
.....Percival Hall, District of Columbia
Chairman, Committee on Certification.....
.....Ignatius Bjorlee, Maryland

The Conference of Executives of American Schools for the Deaf, originally the Convention of Superintendents and Principals of American Institutions for the Deaf, was founded in 1868 and subsequently incorporated under the laws of the State of Maryland. The Conference is an organization of the executive officers of schools for the deaf in the United States and Canada and has for its object "to promote the management and operation of schools for the deaf along the most approved and most efficient lines and to further and promote the general welfare of the deaf."

THE CONVENTION OF AMERICAN INSTRUCTORS OF THE DEAF

President.....Ignatius Bjorlee, Maryland
Vice President.....Edmund A. Stevenson, Indiana
Secretary.....Elizabeth W. Dudley, Kansas
Treasurer.....Olof A. Hedstrom, Maryland
Directors.....Victor O. Skyberg, Minnesota
Clarence Ford, Indiana
Olof A. Hedstrom, Maryland

The Convention of American Instructors of the Deaf, founded in 1[illegible] and incorporated in 1[illegible], grew out of the Convention of 1897, is an organization of teachers of the deaf in the United States and Canada. Its object, as set forth in the constitution, is the promotion of the education of the deaf in the broadest, most advanced and progressive manner. Its purposes "to secure the highest possible degree of intellectual, moral, and physical development of all persons entrusted to the care of the deaf in America."

Vol. 83 No. 3

AMERICAN ANNALS OF THE DEAF

Official Organ

Conference of Executives of American Schools for the Deaf
Convention of American Instructors of the Deaf

Edited by

IRVING S. FUSFELD

Under the Direction of

PERCIVAL HALL, of the District of Columbia, 1939
FRANK M. DRIGGS, of Utah, *ex officio*
MADISON J. LEE, of Kentucky, 1939
ELWOOD A. STEVENSON, of California, 1945
IGNATIUS BJORLEE, of Maryland, 1942
ALVIN E. POPE, of New Jersey, 1942
CLARENCE J. SETTLES, of Florida, 1945

Executive Committee of the Conference

MAY

1938

Contents

WHAT SHOULD BE DONE ABOUT READING IN OUR SCHOOLS FOR THE DEAF?.....*James R. Kirkley, M.A.* 197
The Improvement of Reading, 200.

VOCABULARY BUILDING.....*Fanny Day Hurst* 209

DEALING WITH ZEROS IN THE MINUEND....*Max N. Mossel, B.A.* 218

EVER-WIDENING FIELDS OF RESEARCH.....*Rudolf Pintner, Ph.D.* 225

REVISED CURRICULUM FOR FIRST PREPARATORY YEAR AS COMPILED FOR THE SOUTHERN CONFERENCE OF EXECUTIVES OF SCHOOLS FOR THE DEAF—II..... 235
Fourth Six Weeks, 235; Fifth Six Weeks, 237; Sixth Six Weeks, 239; Summary of Work, 240.

A PRAYER AT TWILIGHT.....*W. T. Griffing, B.A.* 243

THE SOCIAL COMPETENCE OF DEAF AND HARD-OF-HEARING CHILDREN IN A PUBLIC DAY-SCHOOL .....*Alice Streng, M.A., and Samuel A. Kirk, Ph.D.* 244
Introduction, 244; Problem, 245; Procedure, 246; Results, 246; Discussion, 251; Summary and Conclusions, 252.

A COMPARATIVE STUDY OF THE BEHAVIOR TRAITS OF DEAF AND HEARING CHILDREN OF NEW YORK CITY.....*N. Norton Springer, Ph.D.* 255
Introduction, 255; The Problem, 255; The Testing Program, 256; The Subjects, 257; The Results, 258; Summary and General Conclusions, 270.

AN EXPERIMENTAL STUDY OF THE COMPARATIVE RATE OF UTTERANCE OF DEAF AND NORMAL HEARING SPEAKERS .....*Charles H. Voelker, M.A.* 274
Apparatus, 274; Subjects and Materials, 274; Procedure, 277; Statistical Results, 278; Results, 281; Conclusions, 282.

MISCELLANEOUS .....*I.S.F.* 285
Preliminary Announcement of the Next Meeting of the Convention, 285; Certification, 285; Miss Kent's "Suggestions for Teaching Rhythm to the Deaf," 286; Mr. Haycock's "The Teaching of Speech," 286; Special Summer Courses for Teachers of the Deaf, 287.

The AMERICAN ANNALS OF THE DEAF is published bi-monthly during the school year, appearing in the months of January, March, May, September, and November. The subscription is $2.00 a year, payable in advance; January number, one dollar a copy; single numbers otherwise, 50 cents each. The subscription for foreign countries is $2.20 a year.

Publication office: 450 Ahnaip Street, Menasha, Wisconsin. Editorial office: Kendall Green, Washington, D.C. Entered as second-class matter at the Postoffice at Menasha, Wisconsin. Acceptance for mailing at the special rate of postage provided for in the Act of February 28, 1925, authorized June 25, 1932. Subscriptions made payable to the AMERICAN ANNALS OF THE DEAF may be sent to 450 Ahnaip Street, Menasha, Wisconsin, or to the Editor, Gallaudet College, Kendall Green, Washington, D.C.

GEORGE BANTA PUBLISHING COMPANY, MENASHA, WIS.

Vol. 83 MAY, 1938 No. 3

AMERICAN ANNALS OF THE DEAF

What Should Be Done About Reading In Our Schools for the Deaf?

By JAMES R. KIRKLEY, M.A.
Instructor in the American School
West Hartford, Connecticut

EVERY school for the deaf benefits its pupils in proportion to its facilities and the degree of efficiency with which the latter are made to function. Although the degree could never be accurately determined, it is safe to say that no two schools are on a parity in regard to service rendered. This is a natural conclusion resulting from the wide difference in plants, equipment, and teaching staffs of the various schools. Is it not true, however, that schools have a tendency to be quite generous in estimating their own efficiency? It is natural for one teacher to presume her class equal or superior to a similarly graded group. It is natural, too, for a superintendent to be somewhat prejudiced regarding his school as a whole. But, in many instances, a school's defense of its efficiency is an injustice to the deaf.

Does each school provide a course for the improvement of reading in the upper grades, perhaps better known as remedial reading, the mechanics of reading, or interpretive reading? The fact is important that the average deaf pupil of the advanced grades is a poor reader.

Gallaudet College has for a number of years been aware of the low reading ability of her preparatory students. A member of the college faculty, in a lecture before the Normal Class of 1937, stated that preparatory students frequently fail as a result of inability to read well. When we realize that the beginning class at Gallaudet is composed of our most

able graduates, we are left with a very uncomplimentary picture of the reading ability of the majority of our pupils who do not attend college. The lecturer also stated that the average state school cannot assume full responsibility for the teaching of reading. Further, deficiency in reading ability seems to be a failing not only of schools for deaf children but also of schools in general. The college has attempted to remedy the situation so far as it is concerned by instituting a reading course for preparatory students. That opinion and the action of the college both seem justified in view of the fact that they have had to contend with the same problem year after year. The question, however, cannot be decided until schools wake to the realization that they graduate poor readers and that they must make every effort to remedy the situation.

In the past, schools have been content to consign to the elementary department a burden which the entire school would have difficulty in bearing. They have felt justified because instructors too readily assume their pupils to be comprehensive readers. The instructor should not be held wholly responsible however. The deaf ordinarily give the impression of being accomplished readers. They evidently form the habit of reading words rather than thoughts. Possibly they are seeking familiar words. How else could they be so engrossed in their class reading periods and reap such a meager harvest of logical thought? If one is of the school of teachers that depends more or less entirely on the question and answer method of checking comprehension, he will be even more convinced of the pupil's apparent ability, because most of the questions will be chiefly concerned with details. Principally because of the pronounced emphasis placed on this method, the deaf possess one skill which is not in dire need of nourishment—the ability to note details. But this is only one of many skills necessary to efficient reading. How many of our pupils can predict the outcome of given events? Can they formulate the central idea of a passage? They may give some striking detail or irrelevant and minor point, but few will hit the essential center of the whole. WHY? Because reading means thinking. Storm and Smith say, "Reading is

not confined to the literal recognition of symbols alone, but rather is a complex thinking process—a process of word-recognition plus thinking."[1] The limited vocabulary of the average deaf pupil indicates only partial success in the teaching of word-recognition. What success can schools claim for teaching that more complicated process, thinking?

The surface was broken several years ago when more time was allotted to reading in the primary and intermediate departments. But why put one foot forward and stop? The skills developed in these departments are both beneficial and very necessary, but they are insufficient and inefficient to cope with the demands of the more advanced reading matter of the upper grades. The material used in these grades demands a greater variety of more complicated skills. Thus a pupil's advance in the grades necessitates a parallel increase in both the number of skills and the completeness with which they are mastered.

Superintendents and principals of public high schools over the entire country are aware that many reading skills cannot precede a certain degree of maturation on the part of the pupil. In many instances they have adopted a school-wide program. This is definitely at odds with the scheme of most of our schools for the deaf where the need is even greater. It is true that practically every school maintains throughout its curriculum a course *called* reading. It might more appropriately be called literature. But all the literature in existence is useless to the person who does not know *how* to read. And the average deaf pupil can be placed in that category. For those who still challenge the statement it is here suggested that they give a series of reliable and valid reading tests and compare the grade equivalent with that of other subjects. It will be found that the reading quotient is lower.

Now the ability to read has always been established as a vital necessity to the attainment of an education. It is the master key to nearly every other school subject. Quoting Ellwood P. Cubberley: "In the lower grades it (the ability

[1] Storm, Grace and Smith, Nila. *Reading in the Primary Grades.* Ginn & Company, Boston, 1930, p. 202.

to read) constitutes the chief basis for promotion. In the upper grades it forms the chief means for acquiring new information and expanding the pupil's thinking, as well as determining his progress. In the course of a pupil's progress through the grades the mastery of reading occupies the place of first importance in his academic training."[2] Then in order to raise the pupil's standard or increase his ability to learn, why not develop and improve the fundamentally essential tool, READING? A logical conclusion is that every school should provide a course for the improvement of reading in the advanced department.

The American School at Hartford recognized this need and has met it by the establishment of such a course as a definite part of its reading program. The fact that departmental work had previously been established in the upper grades simplified merging it into the program. Thus one instructor can concentrate on the problem of improving the reading ability of all pupils in grades seven through twelve.

Below is a condensed outline of the course as it exists at present. It will be seen that the course is very flexible. This permits adjustments to be made so that progress will be assured. Following the outline is a detailed explanation of the introductory work, the course itself, and examples of exercises that are being used.

THE IMPROVEMENT OF READING

I. Development of Skills
   - A. Vocabulary
     1. Informal exercises
     2. Games—Contests
   - B. Comprehension
     1. Ability to follow directions
     2. Predicting the outcome of given events
     3. Determining the central thought
     4. Organization of ideas
     5. Paragraph meaning

[2] McKee, Paul. *Reading and Literature in the Elementary School.* Editor's Introduction. Houghton Mifflin Company, New York, 1934.

C. Speed
   1. Short-exposure exercises
   2. Reading under pressure of time

D. Interest
   1. Story-telling
   2. Providing proper material

II. Application of Skills
   A. Current Events, Weekly Readers, Magazines, Newspapers (Parade of Youth)
   B. Textbooks and Workbooks
   C. Library books

(The first three days of every week are allotted to the Development of Skills with a majority of time given to vocabulary and comprehension. The last two days of the week are given to the Application of Skills.)

I. Development of Skills. Several factors combined to complicate the initial work. The great variety of skills mentioned by Gates, McKee, Traxler, and Hovious evidently overlap to a great extent and have no definite grade placement. Lack of knowledge of the reading level of the various pupils further involved the problem.

The first step was taken by administering a reading test. This served the immediate purpose of diagnosing the chief difficulties of the pupils and at the end of the year when compared with another test it will serve as a measure of their progress.

There are several tests which are suitable as checks on many of the more important skills. The Gates Silent Reading Tests, the Iowa Silent Reading Tests, and the Sangren-Woody Reading Tests are a few. Tests should be changed from year to year, but not within a year. The factor of familiarity is present when different forms of the same test are used but the variation is so slight that results are fairly accurate.

The Sangren-Woody Test was selected this year chiefly because it was designed to measure seven distinct phases of reading ability, all of which are stressed by leading authori-

ties on reading. As a result of conclusions formed from this test, and for the purpose of facilitating the work, it was decided to subdivide the Development of Skills into: (A) Vocabulary work; (B) Development of comprehension; (C) Development of speed; and (D) Building up interest.

A. *Vocabulary Development.*—The Teacher's Word Book by Thorndike is used as a chief source of words. Interest is maintained by presenting the words in a great variety of exercises. Any that will help create an interest in the study of words is worthy of use. "Ditto" copies of the following exercises are made so that each pupil may keep his corrected copy for further study.

1. Informal exercises:

a. 50 items

Instructions: Place an "S" between each pair of words having the same or nearly the same meaning, and place an "O" between those having opposite meanings.

1. good —— bad
2. look down on —— despise
3. never —— always
4. mine —— yours

etc.

b. 25 items

Directions: Underline the one word in each of the following that will make it most clear.

1. We make little of an incident that is not IMPORTANT SHORT DOUBTFUL FRIENDLY.
2. To be above board means to be ON A BOAT HONEST ON A LADDER LOST.
3. A person in a hurry should travel FARTHER BY HOOK OR CROOK SWIFTLY DOWNHILL.
4. An ignorant person is without FEELING MANNERS CURIOSITY KNOWLEDGE.

etc.

c. 50 items

To the pupil: Write beside each word another with exactly the same meaning. (Opposites may also be requested.)

1. boy————————
2. out of date————————
3. in————————
4. pretty————————

etc.

2. Games or Contests:

There are several contests in which the pupils have shown much interest. Several times they have been supplied with paper and pencils and told to write as many words as possible in a specified period of time. This serves as a mental stimulant and is also a very good spelling test.

Another which has proved recreational as well as educa-

tional is a game in which the pupils demonstrate the meaning of words by facial expressions or actions. One pupil is allowed to demonstrate by pantomime while the remainder of the class attempts to guess the word. Teachers or pupils can supply words. Words used are such as: hobble, anger, drowsy, strain, surprise, relaxation, pant, tiptoe, and restless.

It often happens that the pupils complete their exercises before the end of a class period. In such a case they might be allowed, each in turn, a trial at giving a word that is not known by his classmates. Originator must know the meaning of the word he supplies. This, too, encourages a study of words.

B. *Improving Comprehension.*—This is the most important phase of the reading course. In fact, all of the work, vocabulary and all, could easily be incorporated under the one head, comprehension. A distinction is made only for the purpose of simplifying application. The exercises mentioned below serve a dual purpose. They develop skills which are necessary to comprehension and at the same time the pupil gets training in thinking, all of which contribute to his total ability to read. The length of each of the following exercises is approximately one typewritten page. Copies are made so that every pupil may have one.

1. Following directions:

This is very similar to the command work of the primary department. The chief difference is in the degree of difficulty and the method of presentation. The exercises are of two types. In the first, written answers are required. Type b requires actions as answers, and is given either orally or in writing on the slate.

a. 25 items

To the pupil: Read each of the following carefully, then do exactly as you are told.

1. Draw a line around the longest word in this sentence.
2. Place a dot in the upper left corner of this paper.
3. Cross out the circular letter in FORMAL.
4. Write the name of the person sitting nearest you.

etc.

b. Indefinite number

To the pupil: Do exactly what I ask you to do.

1. Stand up and reach as high as you can.

2. Place the back of your chair against the west wall.
3. Remove everything from your right outside coat pocket.
etc.

2. Predicting the outcome of given events:

This exercises the imagination and thus develops the ability to create new ideas or combine old ones. All of this is a mental process which stimulates thought.

Instructions: Read the following selections as quickly as you can. There is a question following each. Select the best answer from those given.

1. Jerry and his dog, Bing, were always seen together. It is hard to say which loved the other more. On Saturday afternoons when Jerry went fishing, Bing was always at his side. The only time they were not seen together was on Sundays when Jerry went to church. Even then Bing had to be left in the house with all the doors and windows closed.

One Sunday the family was in a hurry to get to church. They forgot and left a window open. What do you think happened next?

(a) Bing went to sleep until the family returned.
(b) Jerry remembered the open window and came back to close it.
(c) Bing found the open window and followed the family to church.

3. Finding the central thought:

Dr. Ruth Strang, Teachers College, Columbia University, says that skill in selecting the central thought of a passage will not only increase the speed of reading but will also make studying easier. Instead of trying to remember each fact separately, the student will only need remember the central thought and the supporting facts will come to mind quickly and easily.[3]

Directions: Read each paragraph carefully. Then draw a line under the best answers to the questions following each.

1. As you begin the study of geometry, you no doubt wish to know why the subject is taught and what benefit you will receive from its study. It is primarily designed to train the pupil in the ability to understand and follow the reasoning of others, and to reason well himself. It is said that Abraham Lincoln studied geometry in order to make better arguments in court. Too, if you are thinking of becoming an engineer, or an architect you must first learn geometry, since a knowledge of it is necessary for success in these fields.

Which statement best tells what the above selection is about?

(a) How Lincoln became a great lawyer.
(b) Why an architect studies geometry.
(c) Why geometry is studied.

---

[3] Strang, Ruth. *Study Type of Reading Exercises.* Bureau of Publications, Teachers College, Columbia University, N.Y. 1935.

4. Organization of ideas:

This type of exercise is designed to give the pupils practice in organizing logically the ideas contained in a paragraph or a longer passage.

Instructions: Number the following statements in the order needed to make a connected story. Place a -1- before the first, etc.

( ) They took them into the palace and made them their own.
( ) There were no little children in the house or garden.
( ) The king and queen were then happy.
( ) Once there lived a king and queen in a large palace.
( ) But the king and queen were not happy.
( ) One day they found a poor little boy and girl at their door.

As the various skills are developed or mastered by the pupils, the passages may be increased in length and difficulty. For instance, in organization, a passage of three, four, five, or more paragraphs may be followed by the disarranged main thoughts of the paragraphs, the students being required to number them in proper sequence.

5. Paragraph meaning:

The Stanford and Metropolitan Achievement Tests use this type of exercise as a test of reading ability. Similar exercises can be very easily prepared and can be made either simple or difficult as desired. Few other exercises will be as helpful to the development of reasoning power.

To the pupil: Fill the following blanks with words that will give a clear meaning to each paragraph.

1. The person who is always tardy in meeting an appointment will never be respected or successful. Therefore, if we wish to prosper we should form the habit of being ——— ———————.

2. It was a happy bunch of boys. Will carried the blankets and the tent. Harry carried the fishing tackle and a cooking kit. Bob carried the musical instruments. The ——————————— would be used to catch much of their food. The load carried by ——————— would no doubt be used often around the campfire at night. It's easy to guess that these boys were just starting out on a ——————— trip.

C. *Speed.*—The rate at which a passage can be read is determined by the type of material and the purpose for which it is being read. Since the purpose of this course is to improve the pupil's reading ability, the type of material is comparatively simple. This action is based on the results of several investigations by leading authorities on reading.

They maintain that not only speed but comprehension as

well will be greatly benefited if the individual is provided with the opportunity for much reading of a wide variety of simple interesting material. Of course, speed is so closely associated with comprehension that it has no worth or meaning when isolated from comprehension. This fact often makes it necessary to reverse the purpose of this phase of the work. That is, a pupil who apparently reads rapidly and with little or no comprehension is cautioned against fast reading and advised to go more slowly.

So far no great emphasis has been placed on the development of speed for fear this would be detrimental to the more important factor, comprehension. The only exercises used have been of such a nature that comprehension could be checked simultaneously with speed.

Each of the exercises used for the development of other skills may also be utilized in the development of speed. No definite time limit is set but the entire class begins an exercise at the same time. They are asked to write their names on the slate as they finish. This challenges their spirit of rivalry. Every one naturally desires to be first and no one wishes to be last.

Quick perception exercises create more interest, however. A projector may be used to flash different types of statements on a screen. More simple and just as effective is a screened slate. A curtain is hung over the most suitable blackboard. It is arranged on rings so that it can be pulled back and forth to reveal or hide the slate at will. Either true-false, multiple choice, or completion statements may be used, thus making it necessary for the pupil to write only one word per statement as a check. This work is done under pressure of time.

D. *Interest.*—The many cases of reading disability among pupils of high school age makes this part of the work very important. It is practically impossible to overcome this disability without the support of interest. It is essential first to arouse an interest in reading, then through this interest correct faults and develop necessary skills.

On hearing of the development of interest without investigating, one naturally assumes that all manner of schemes

are necessary to build interest. This is not true. All that is needed is a little strategy and diplomacy. The best means of arousing a desire for reading is an interesting book which can be read easily. This is true because rapid progress, real enjoyment, and the consciousness of success are distinctly motivating and inspiring. The older deaf pupil has a favorite expression for books which he considers beneath his ability, "babyish." However, by handling the situation diplomatically the instructor can usually show the pupil the wisdom in reading simplified material. In many cases the grade mark of textbooks can be concealed.

The deaf have always been enthusiastic "listeners." Tell them a story and they immediately ask for another. This is particularly true of the older deaf pupils. They are more attentive and appreciative. Thus the instructor is presented with an excellent means of creating interest. Tell an incident which can be associated in some way with whatever is to be read and the reader will immediately evince a greater interest. The closer the association the better, but even an incident regarding the life of an author will create an interest in his books.

In the February 1, 1938 issue of the *Convention Bulletin* there appeared a check list for teachers, prepared by Mr. Sam B. Craig, principal of Kendall School. Under *Professional Qualities* was listed the question, "Do I read a good daily paper before going to class in the morning?" Teachers who do not are failing to take advantage of a very serviceable method of lightening their own load by making that of the pupil more interesting. It is surprising how many items from a daily paper can be associated with the work of the day. The alert teacher can use many as oral introductions to reading matter, thus making the material less detached, more real and consequently more interesting.

II. The Application of Skills. It has been previously stated that the average deaf pupil of the upper grades has for various reasons failed to develop adequate reading skills. One reason, the chief one, is the difficulty of the material with which they are supplied. Dr. Thorndike has found that, with a great many pupils, the effort demanded is so great

as to destroy interest and make the reading exercise all but worthless.

The material selected must be judged by two standards, simplified vocabulary and sentence structure and adolescent content. Due to grading difficulties or the existing discrepancies in the reading ability of the average class, the teacher must prescribe for each pupil according to his, the pupil's, reading level. This involves providing the reading classroom with a library of readers, papers, workbooks, etc., ranging in difficulty from the lowest to the highest reading level of the various pupils. Thus the problem of selecting suitable material becomes essentially one for the individual teacher.

Vocabulary Building

By FANNY DAY HURST
Late Instructor in the Utah School, Ogden, Utah

THE building of the deaf child's vocabulary is an unending challenge to those who have him in charge. Primarily, this duty falls upon the teacher of English. Essentially, it must be the work of everyone associated with him, to add the vocabulary of his particular academic subject or branch of industry to the meagre assemblage of words in even the brightest child's possession.

How easy and how right—and psychological—it is, for instance, for the teacher of cooking to distinguish in her cooking class the difference between the idea of making certain foods, a cake perhaps or escalloped potatoes—in which process, various ingredients are combined—and of baking, frying, boiling, where only the cooking process is involved; and how equally important it is for the teacher of physics to distinguish between "electric" as an adjective and "electricity" as a noun. True the English teacher has given the "ity" noun suffix and the "ic" adjective suffix, but it is for the science teacher to add a blow in the "inculcating" process. Have we ever thought of the literal meaning of inculcate? *To drive in with the heel!* And how earnestly we should *inculcate* if we hope to succeed in teaching vocabulary! The science teacher should go further; he should teach at least some of the cognates—electrify, electrification, electrocute, electromoter, electrometer and some compounds, electroplate, electrotype—not that he hopes that the child will use these words, all of them, but that he may get the "feel" of the group and recognize the words as well as catch the idea of other derivatives met in his reading.

Which leads us to the great principle back of all vocabulary building—the recognizable vocabulary should be much larger than the ordinary working vocabulary. Selection tests will disclose this recognition of meaning. Incorporation into sentence and paragraph will disclose the ability to use the word; will open the eyes, often, of the teacher to her failure

to make the meaning clear, for, too often, faulty use of words by the pupil is traceable to the teacher's eagerness to get on with the work, to her *assuming too much.* The limitation of the child's experience should never escape the teacher's mind—and it does, sometimes.

As an illustration; we were reading, "All's Well that Ends Well." I had said, "What kind of girl was Helen? Make a list of words or expressions describing her," and one girl wrote upon the board, in list form, "She was young, fair, honest, lovable." Another added, sensitive, and another, virtuous. (Later, we added ambitious and clever.)

Someone asked, "What is virtuous?" This was referred to the class and another said, "Pure." Sensitive was dramatized and later, the second meaning, as in "sensitive to cold," was explained.

The assignment, "Write some sentences, choosing any six new words and using them," was given. More often we use the word in a paragraph and the paragraphs are exchanged and read, for the thread of story does much, by association, to "set" the meaning of the word.

The inevitable happened! One sentence read, "The water that we drink should be virtuous." It was all my fault and I knew it. Notebooks came out for vocabulary study. Virtuous means pure in thought or in act caused by thought. Can water think? And so we built the difference between pure as applied to the physical, free from germs of disease, pure milk, pure water, pure blood, pure air; and the other pure, or virtuous, which does not apply to the physical. Virtuous and pure minded went down as synonyms.

Again, from some source, a pupil gleaned the very desirable word, realize. Someone must have told her, carelessly —oh, the pity of it when we do this—that it meant to believe. Soon, in a letter I found, "Mary told me that my mother had come to see me but I did not realize her."

To realize does not mean to believe, although we say, "I can not believe it is true." The emphasis to the child is that she does both know and believe, but although she is sure that it is true, it does not *seem* true; it is hard to believe. The combination, *to realize that,* must first be taught; I can

not realize that I am sixteen; that John is the champion; that Helen is dead. I doubt the wisdom of teaching at once, if at all, the abbreviated form, "I can not realize Helen's death," "my age," for why not, "John's champion" or even "John's championship?" There are times when we may let well enough alone; this may be one of them, unless the pupil, in her reading, finds such expressions and asks the inevitable, "Why?' We may then explain that we so use abstract nouns in this fashion, and list, "I cannot realize my success," "my failure," "her death," "your age," "your weight," all of which nouns are convertible into "that ————-."

That vocabulary should be—to use a much overworked but very meaty modern term—*motivated,* goes without saying. When virtuous is discussed, the time is opportune to give the class an outline, longer or shorter, as seems advisable. In outline form, then, a person has three natures; the mental, the spiritual, the physical.

As a class project, a page of the notebooks labeled *A Person,* is divided into two columns: The mental and the spiritual natures: The physical nature. Under each is written, respectively, The Mind and The Soul; The Body. Henceforth, in all reading, expressions that come up, bearing upon these subdivisions are entered. Helen's *features* (were sad) would go under *The Physical.* Then a little discussion; as, Which features can show sadness? Joy? Your chin and nose are features. When you go with your chin or your nose "in the air" (idiom), what does your chin or your nose express? Which features cannot express any feeling? (The ears). We have an idiom that means, "grew interested and began to listen"—She pricked up her ears. "Draw a picture of a horse that has pricked up its ears. Jane, why do you think that horse has pricked up its ears? James? Tom? Did you ever prick up your ears? Tell us about it in a paragraph, at the board.

Character was listed under mental and spiritual. Its meaning was arrived at less through an effort to define than through illustration and classification. "Your character is what you really are, deep within yourself. Your thoughts and actions make your character. Going with people who

steal and lie often changes a good character to a bad one. Sometimes we may help a boy, who steals and lies, to have a good character."

Let us make a list of things that make a good character; honesty, truthfulness, unselfishness, loyalty, being patriotic, and so on. In the same way, we handle "a bad character."

"George Washington had a fine character. List the things that prove that he had. He was ——, ——, ——, etc. Tell me about Dillinger's character. Think about your own character."

The triangle, of which more will be said later, should be used here to show that some traits are much worse or much better than others; as, laziness, carelessness, not being neat, may go at the bottom of the triangle; selfishness, thoughtlessness of others, tattling, impoliteness, go higher; lying, stealing, higher still, with murdering, kidnaping, among those at the top; in fact, opinion as to relative values may differ, here, but the moral lesson is gained.

Other idiomatic expressions may be given; as, She lifted her forehead, She raised her eyebrows, She drew down her mouth, She wrinkled her forehead, She sat open-mouthed, (*vs.* I opened my mouth), She stared wide-eyed, She turned up her nose—all of which will, of course, be dramatized.

In the column, Mental and Spiritual, we write, Bertram was haughty, the countess was heart-broken, Helen was clever, wise, virtuous.

In the way of cognates, they learn that Lafeu was a *courtier* of the king of France and we develop from "court," the cognates, courtier, courtly, courteous, courtesy, together with courtmartial and courtship, if advisable, and certainly, "court favor," "court failure," "a friend at court." The history teacher may care to trace the word *cohort,* another cognate of *court.*

Helena was on her way to the shrine of Jacques le Grand when she met Diana. Pictures of various shrines give the idea of sacredness. From this, we develop the cognates, enshrine and Shriner. From the library we bring a reference book showing the Lincoln Memorial, under which is written, "Enshrined here is ——," and we develop the newer meaning

and give "enshrined in my heart, in my memory"; A late magazine carries a picture of Victoria's Shrine of Remembrance; the Tomb of the Unknown Soldier is such a shrine. Thus we correlate vocabulary with life.

Cognates arouse interest in a class; as, table, tablet, and perhaps tableau, tabloid. And right here we teach "turn the tables" and perhaps "table a bill." Much depends upon the calibre of the class. The simple idioms may be taught, surely.

I offer as a few suggestions in cognates the following: Cycle, bicycle, motorcycle, tricycle; dead, deadly, deathly, deaden, death, dead-set, dead-weight, deadhead, dead-center; live, life, lively, enliven, lifeless, living, lifelike, alive, livelihood, a living; content, contentment, discontent; plate, plain, plan, plateau, palette, platform and plate glass; pale and palid; disturb, disturbance, perturb, imperturbable; knee, kneel, with kneecap, knee length, knee-breeches; mound, mountain, mount, dismount, mountebank, mountaineer; destroy, destroyer, destruction, destructible, indestructible, destructive; finite, definite, define, definition, finis, infinitive; depend, dependent, independent, pendent, pendulum, suspend, suspension; all the "graphs"; rebel, rebellious, rebellion; cap, caption, capital, decapitate; thief, theft, thievery, thieving.

The literal meanings of words add color, so often; a mountebank, for instance, was originally anyone who *mounted* a box or chair or anything convenient and harangued; the root of define and definite, definition, *finis*, means literally *to bound, to put a limit around*. How easy from that to develop the idea of limitation in all cognates of this same root. Monotonous means literally, *cut in a single direction*. The antonyms, variable, variety, variation come naturally here. Monotonous school days! Monotonous openings to letters! Variety is so much more pleasing! *Variegated* is good here, with its many applications; the variegated colors of autumn, the variegated leaves of the foliage plant, and so on. Bring something to class tomorrow that is variegated; "The weather is variable," written some day when sun and rain alternate, with a blank, of course, for *variable*.

Some other cognates might be, pacific, Pacific, pacify, peace, peaceful, peaceable; pater, patron, patronize, pattern; cease, cessation; know, knowledge, acknowledge; notice, notify (*et al*), notion; remember, memory, memorize, memorial, memorable; succeed, success, successful; plain (clear), plenty, plentiful; ready, readily, readiness, unready; study, student, studious; sting (to produce pain), stingy; submit, permit, commit.

Antonyms often may be taught in contrasting two characters in a story, generals in an army, types of land, weather —always tied to a subject at hand.

On studying the two brothers in a fairy story, we discovered that one was stingy, well-fed, successful, impatient, grouchy, in contrast to the one who was generous, hungry, unsuccessful but patient and sunny. This went on the blackboard as two vertical lists, so that the oppositeness might have emphasis. Fertile lands against barren lands; to cheat—to play fairly; to ascend—to descend, all came out in the story of the two brothers.

As a teacher of English, I am naturally drawing my illustrations from my line of work. Coaly-Bay, the horse that could not be tamed, was rebellious. Colts are usually rebellious at first, but after a while they become ———. What? Submissive. A few Ethopian chieftains have become submissive to the Italians but most of them are still rebellious. Later, Aladdin is read and these words are reviewed. Aladdin rebelled against giving up the lamp; the genie was submissive to Aladdin. The people rebelled (cognate) against the king's killing Aladdin. Aladdin agreed to submit (cognate) to the king's decree, if he failed to find the princess. The interest in other stories. becomes progressively strong for it has the earmarks of a game, this *Find-the-Word* activity; as, Aladdin———against giving up the lamp; or, Aladdin (rebelled against; submitted to) giving up the lamp; or, Someone rebelled against something in this story. When we come to this, tell me about it. Finally, we suggest, "Every time you read about a rebellion or a rebellious person or animal, in the future, tell the class about it. I wonder who will be the first!" Again; "Aladdin rebelled against giving

up the lamp." Tell me this but use "rebellious." Choice of words; Aladdin's (rebel; rebellion; rebellious) against giving up the lamp, made the magician (anger; angry). Drive it in with the heel! Therein lies our only hope.

There are, of course, the usual building of noun, verb, adjective, adverb, from the root-word—cognates definitely classified, as to grammatical use; the study of noun-suffixes as against adjective-suffixes, so that the pupil knows why he must not say, "It made me warmth," "It made me comfort," "It gave me comfortable"; the study of prefixes, grouped, as far as possible. There are, for instance, the negative prefixes, dis, in, un, non, ir; the intensives, hyper, arch, over (overwork), ultra, super; the reversals, anti, ant, counter, mis, re (recall); the positions, as, sub, trans, under, post, ante, over (overspread), inter (interline); the numerals, as, bi, tri, quad, poly, multi. Grouping in this way is effective.

Then, too, there are countless vocabulary byroads leading from almost any source.

In the case of the story of the twin bears, we naturally spoke of triplets, quadruplets, quintuplets and litter and brood. The past year we added the Ethiopian sextuplets, whose pictures had recently come out. The story of a herd of deer brought out the words flock, bevy, school, or shoal, bunch, pack, swarm, hoard, covey, drove. To "set" these words, we wrote paragraphs, different pupils taking different words and writing about "A swarm of ———," "A litter of ———," etc. In class, these paragraphs were, as usual, exchanged for silent reading, so that all the words were given emphasis through the story association.

Group words are needed. Here too, we start with the known, using a large circle or a bracket bearing the group name and filled with the specific names; as, (a) *Tree* with apple, pear, peach, pine, sycamore, and so on: or, (b) *Building* with hospital, barn, dormitory, church, home, store, depot. Group names are especially helpful in teaching definitions: a knife, for instance, is an instrument or tool used for cutting. So is an axe. All right. Let's outline tools for cutting —a knife, an axe, a saw, a razor, scissors. Equipment, emotion, device, convenience, necessity, liquid, solid, material—

such group words are constantly coming up and giving fine vocabulary opportunity. The distinction between instrument, and implement, both tools, may well be given, at the right time.

In the building of synonyms, I have found much help in the use of the pyramid—really only a triangle, coming to a peak at the top. A ladder would serve or steps, but the triangle is quicker, simpler and really more graphic. Words written at the base are the "weak" words; those at the peak, are very "strong." Working again from the known, we draw a triangle and write at the base, sorry, disappointed. Just above we write sad, distressed, troubled. At the peak, broken hearted. (Older children may be given inconsolable and such words.) The tendency of the deaf child to use "shock" as a synonym for "surprise," may be met here, by showing surprise at the base of the pyramid, as mild, using of course, illustrative sentences. We build toward the peak, where astonish shows intensity but does not imply a serious nervous reaction. Shock is then shown as related to amaze, dumbfound, astound, stun, but still in a class only with stun since those two are used to show great nerve strain under the surprise. Then, too, we show that amaze is too strong a word for surprise over trivialities; as in, "I was amazed that you went to ride with my uncle George in his new car."

A pupil asked the meaning of "would not tolerate." We drew a pyramid, writing, "will not let," "allow," "permit" at the base; "cannot bear," "endure," "stand," above; and at the peak, "——— not tolerate," again illustrating with examples and instances within the pupil's experience.

Again, a pupil asked for the meaning of torment. We drew our pyramid, at the base writing, bother, annoy, worry, bore, tease. Just above, vex, displease, trouble, disturb. A step higher—*illustrating as we built*—provoke, irritate, anger, distract, distress, plague, torment. And at the peak, infuriate, torture, enrage.

a. A fly annoys, bothers you.

The boys tease the girls. (a different spirit here.)

You are bored when you have nothing interesting to do.

b. After a while, you get cross with the fly. Then it vexes, disturbs, troubles you.

Your mother is displeased, vexed, troubled, when you are not obedient.

Your coach is displeased when you play your game poorly.

c. Italy is irritated, angered with the League of Nations.

Sometimes the older boys torment the younger children.

The Loyalists are distressed, distracted, when the bombs begin to fall.

d. If the bombs kill their loved ones, they are tortured with sorrow and infuriated, or enraged against the Insurgents.

Pique, rile, badger, beset, pester, aggravate, gall, may or may not be added. The advantage of copying synonyms thus is that as the child meets these words, failing even to recognize them at first, he may be referred to his "To bother" pyramid, in his notebook.

A few other such groups might be, 1. (a) ashamed, embarrassed; (b) mortified; (c) humiliated; (d) disgraced. 2. (a) needful, helpful; (b) important; (c) necessary, requisite, essential; (d) vital, indispensable may be a bit stronger than, or equal to "quite necessary"; 3. (a) receive; (b) get; (slightly more effort as we go along, brought out in the illustrations); (c) obtain, secure (*vs.* "I secured a letter from my mother.") (d) attain, achieve. 4. (a) disagree; (b) dispute; (c) quarrel, wrangle. 5. (a) scare, frighten; (b) alarm; (c) dismay; (d) intimidate, cow; (e) appall, terrorize, terrify. 6. (a) satisfy; (b) please; (c) delight. 7. (a) hard, difficult; (b) distressing; (c) bitter, devastating, ravaging. 8. (sickness)—(accident) (a) bad; (b) serious, dangerous; (c) fatal.

There has been no effort to cover all the interesting things in vocabulary development. Nor are all the methods of development discussed. These mentioned have seemed to bring results through arousing interest in the child's mind perhaps more than have some others.

Dealing With Zeros in the Minuend

By MAX N. MOSSEL, B.A.
Instructor in the Missouri School, Fulton, Mo.

WHILE subtraction involving two or more zeros in the minued itself presents no difficulty to many children, it nevertheless is a hard nut to crack for many others of lesser ability. It is not readily mastered by novices, and it easily victimizes slower pupils whose only avenue to learning lies in numerous practice drills until consistent accuracy is effected in their work. This article is written with thought of the latter children who are too slow to be taught rationalization, and to suggest something relative to the facilitation of their understanding along with the reduction of the amount of time spent in practice drills.

One of the most prevalent errors in a three-zero minuend, and perhaps the most difficult to eliminate, is intermittent borrowing or borrowing and reducing in regular order when only one cipher needs borrowing with all others to be reduced. Another type of common error calling for scrutiny is that of the failure to reduce the digit from which borrowing is actually done. Rather than tell outright the causes of these errors, we may analyze the working mind of a child and see what tends to prevent the successful solution of an ordinary example involving zero difficulties. The example to be solved is this:

$$\begin{array}{r} 8\,0\,0\,0 \\ -\,3\,6\,4\,2 \\ \hline \end{array}$$

Let us assume that the child has a habit of reducing ciphers one at a time whether mentally or using auxiliary figures, and based upon this procedure, the example partly worked reads thus:

$$\begin{array}{r} \;9 \\ 8\,0\,\not{0}\,0^{1} \\ -\,3\,6\,4\,2 \\ \hline 5\,8 \end{array}$$

The hundreds' place now confronts him. Here at this particular phase which trips even the most diligent child, we may study his various reactions and responses to the same situation at different times. One day he may see no significance in the necessity for reducing the partial number and unthinkingly "borrows" (he borrows again) from "8," making the answer a hundred too large. There is much likelihood that the elapsed time used in working the first two combinations is so great that his consciousness of what he should "do next" is thereby lost. As for other times, all he can see in the hundreds' column is that "O" being smaller should involve borrowing. He may do one of two things, namely to go ahead and borrow as his "conscience dictates" or to go back to the previous column to see if it is done right. Whenever he chooses the latter course, he usually "rationalizes" that if no column can be subtracted twice consequently he should not reduce the hundreds' cipher. (He thinks of "reducing" in the terms of "being borrowed from.") Accordingly he does not reduce the cipher, and in a convincing way produces this answer:

$$\begin{array}{r} 7\ \ 9 \\ 8^{1}\,0\ \emptyset\ 0^{1} \\ -\ 3\ 6\ 4\ 2 \\ \hline 4\ 4\ 5\ 8 \end{array}$$

The result is intermittent borrowing.

Analytically there are two outstanding factors that contributed to his downfall. His faulty procedure, to be sure, is one; the other is simply his ignorance or lack of understanding of what he was actually borrowing from. He invariably associates borrowing with mere reduction of the *next digit* as is done in common subtraction without zero difficulties. He cannot honestly see why hundreds must be reduced when tens in the reduced form have already been subtracted from independently.

An individual testing of 36 deaf and hearing adults revealed some interesting facts.

A little over 30% of them failed to get their answers right

the first time they attempted. Nearly all of them, however, hastily rectified their errors after checking. A very few of these errors were mistakes in subtraction facts, and most of the *original* mistakes—that is, mistakes made but afterwards changed before handing in—resulted in answers either 100 or 1,000 too large.

All the individuals were asked to rationalize or to explain in any conceivable way how they worked out the examples. Even some of those who had their answers right professed their ignorance of where they borrowed. They smiled blandly and said, "Just happened to do it." Some thought they borrowed from "0" itself (the next digit). Others had "a hunch" they borrowed from the last digit, but they could not understand why the zeros became nine's. To summarize, 58.3% of them could not rationalize correctly.

These individuals were able to rationalize examples without zero difficulties, saying that "1" is always borrowed from the next digit whenever there is borrowing. Questioned again about the first examples, a majority of them jumped to the conclusion of "borrowing from the next digit." The recent rationalization of the latter examples undoubtedly influenced and convinced them in their thinking.

The testing demonstrated the fact that the mechanics of operation may be mastered independently of rationalization. Of 21 who could not rationalize, eleven or 52.4% had their answers right anyway. Despite their illogical reasoning, most of them could solve further examples as quickly and correctly as those who could rationalize. It is possible that they learned by imitation, and in this way after a long period of trial-and-error adjustment finally established a correct response habit.

Let us review and apply some facts already set forth, and delve into the child's past where the learning process of subtraction begins.

The teaching of borrowing comes after the mastery of basic and decade combinations and simple forms of subtraction. During this course of learning the child always sees that it is the *next digit* that involves *reduction* whenever there is borrowing. The more he goes through practice drills, the

more he associates borrowing with the reduction of the next digit. All the while his thinking is more and more reduced to an automatic basis.

Then the zero makes its subsequent appearance, first in the subtrahend and later in the minuend. The zero in the units' place in the latter usually does not hold back the child or confuse him. His concept of borrowing from the *next digit* ideally fits here. When two zeros are introduced in the units' and ten's places, he is mystified because he has to borrow not only from the customary "next digit" but also from the other digit. His mystification is intensified when he is later confronted with a three-zero minuend. In both instances he is taught to rationalize, but there is no general rule to guide him in solving a variety of these examples. The rationalization, not fully understood, becomes vague in due time; he now has an idea that only zeros should be reduced, and for some time practices in error. In the beginning when he finds rationalization too deep for him, he does his work by sheer imitation. At times, in a state of confusion, he resorts to the old habit of borrowing from the next digit as the easiest way out for him, thus practising in error. "You borrow hundreds from thousands, tens from hundreds, and units from tens" is too much for his immature mind. During this phase of trial-and-error learning carrying through several grades, he finally finds how to "do it right" in the form of *checking*. The hard-taught rationalization is thrown to the four winds; manipulation of correct answers by checking is much easier and enough for him, even though it takes too much time.

Too often a teacher lays stress on how "distant" borrowing is transmitted through a number without considering the limitations of her pupils. Then there are times when she feels that they should know *why* tens are borrowed from hundreds and units from tens. She forgets that there is a great deal of difference between "borrowing units from tens and tens from hundreds" and "borrowing tens from hundreds and units from tens." The latter procedure demands greater effort and concentration to keep in mind what one is doing while he is performing several things; *i.e.*, recognizing com-

bination facts, writing them down, etc. It can be seen that to require slow children to know *why* would be unduly taxing their minds. The sympathetic teacher usually does not require her slow pupils to rationalize; instead she prepares them materials with hopes that they, after trial-and-error attempts, attain mastery in abundant practice drills. Still, she is not only defeating her purpose of good teaching but is also wasting their time and hers.

For both formal and remedial teaching we would suggest a preparatory exercise in which minuends are used exclusively. Under no circumstance should attempts be made to initiate the class into the mystery of complex borrowing. Simply say that "1" is borrowed from *the nearest digit*, and that any zero or zeros that happen to be lying between this digit and the digit borrowing must be *promptly* reduced to nine's. No rationalization should enter here at all. Psychologically, anything to be reduced to an automatic basis should not involve the teaching of rationalization; hence a rule for guidance should be used in lieu of it. (A bright child, upon request, may be taught on what grounds the rule is based.) An average child is content to follow the rule and not know why. Later on when his mind is more mature, his curiosity as to the *why* of it may be excited, but even then it will be casual.

The procedure in getting children started on subtraction using minuends only involves the presentation of interesting problems to supply motive and meaning. As usual, the children should attempt the solution themselves, and the teacher later solves the problems, using crutches for the benefit of the class. After writing several examples, she lets the children have a good look at them. With a wave of hand signifying caution, she now slowly wipes off the subtrahends leaving the minuends. Attention of the class thus obtained, she shows the procedure of borrowing and lets the children work the rest of the examples in this manner:

2 9	4 9	0 9	8 9
3 $\not{0}^{1}0$	5 $\not{0}^{1}0$	1 $\not{0}^{1}0$	9 $\not{0}^{1}0$

This type of drill requires but a few minutes as there are only nine different three-digit numbers each carrying two zeros. The first impression the children gain in this drill will be the guiding factor in their future acquaintance with similar examples. They should not be given any real work yet unless it is felt with reasonable certainty that they will apply this procedure to it. (A class that has had three or four places involving zero difficulties may be very hard to convert. Old habits seem to have a stronger hold.)

This exercise in use of minuends can be modified to meet the needs of varying conditions in subtrahends. Simply mark off to show what places are borrowing and let the children do the rest, but be sure they understand the motive; *i.e.*, why borrowing begins in tens' or hundreds' places. Examples:

$8^{1}0\ 0 \quad 3\ 0^{1}0\ 0 \quad 4\ 8^{1}0\ 0 \quad 6\ 4\ 0^{1}0$

Other exercises involving zero difficulties:

Zero in tens' place,

Example: $7\ 0^{1}3$

Zero in tens' and hundreds' places,

Example: $9\ 0\ 0^{1}6$

Zero in units' and hundreds' places,

Example: $6\ 0\ 4\ 0$

NOTE: The children should work this example two different ways. This prepares them for a situation in which the subtrahend digit is either smaller or greater than the minuend digit directly above.

$$\begin{array}{r} 5\ \ 3 \\ \not{6}^{1}\ 0\ \not{4}^{1}\ 0 \\ 2\ 4\ \underline{3}\ 9 \\ \hline \end{array} \qquad \begin{array}{r} 5\ 9^{1}3 \\ \not{6}\ \not{0}\ \not{4}^{1}\ 0 \\ 2\ 4\ \underline{6}\ 9 \\ \hline \end{array}$$

Zero in units', tens', and thousands' places,

Example: $7\ 0\ 4\ 0\ 0$ (two ways)

Remedial treatment for the last two types:

Give: $\begin{array}{r} 6\ 0\ 3 \\ \underline{2\ 4\ 8} \end{array}$ Give: $\begin{array}{r} 7\ 0\ 3 \\ \underline{5\ 3\ 7} \end{array}$

Then:	6 0 4 0	Then:	7 0 4 0 0
	2 4 8 6		5 3 7 9 2

(The former examples are for guidance.)

It is not intended that the children form the habit of using auxiliary figures; they are merely used for illustration and should be discarded after the children have had enough practice to be able to borrow mentally. Nevertheless there will always be some children who cannot perform this feat, and under this circumstance it is advisable to let them continue to use "crutches."

Throughout these exercises and abstract drills the child seeks the nearest digit from which to borrow, and while doing so he remembers to reduce all digits that must be reduced. He is guided by a rule in working out these patterns, and there are less chances for him to produce incorrect answers than otherwise. I digress to say that it is quite possible for him to rationalize the take-away-borrowing method, but why bother him with it when he can learn one general rule as outlined here in much less time and use it as effectively, if not much more so?

Ever-Widening Fields of Research[1]

By RUDOLF PINTNER, PH.D.[2]
Professor of Education, Teachers College, Columbia University
New York, N.Y.

DROP a stone into the water and watch the ever-widening circle of waves spreading out from the center. Begin a piece of research and watch the ever-widening circle of research problems spreading out from the original work.

Quite a long time ago I became interested in the possibility of constructing an intelligence test suitable for deaf children. In the attempt to test such children by means of the Binet Scale, it became obvious that nothing like an appropriate mental rating could be obtained by this type of scale. The barrier was not only in the difficulty of communicating with the deaf child, whether by speech, writing, manual alphabet or signs, but also in the basic level of language comprehension attained by the deaf. For the deaf the English language is a foreign language superimposed upon their mother tongue, the natural gesture language. They do not learn English unconsciously as the does the hearing child. It has to be learned as a foreign language is learned by the hearing child. And so it is learned slowly and laboriously in school. In spite of that it might be supposed that they would "catch up" in time and become as proficient as the hearing, just as a foreigner coming to this country as a child has a hard time at first but frequently "catches up" with the native and speaks and comprehends as efficiently as the native. But here again the deaf child is handicapped. This foreign English language does not surround him continually in the form of speech. It is understood vaguely, as through a mist, in the form of lip-reading, and only visually in the written language is it clear and distinct. All of that uncon-

[1] Reprinted, with permission, from the *Advanced School Digest*, Teachers College, Columbia University, vol. 3, no. 2, January, 1938.

[2] In this article I make mention only of studies conducted by my students or by myself in collaboration with others or by myself alone. This is not the place to refer to the contributions of other workers. No attempt is made to give even a brief bibliography of the many fields touched upon.

scious learning, all of that incessant practice that the foreign child gets through his hearing is absent in the learning of the deaf child. And so the deaf child remains all through life handicapped in language.

Intelligence Tests.—Tests that involve language cannot, then, be used for measuring the intelligence of the deaf. If we tried to use them, it would be like trying to use a French test for the measurement of the intelligence of English-speaking American children, disregarding the vast differences in opportunity that such American children might have in learning French. Adequate intelligence tests for the deaf must be based upon material that is non-language in content. This led to my work in the construction of the Pintner-Paterson Performance Scale, the Pintner Non-Language Mental Test, and the Pintner Primary Non-Language Test. These tests make possible a fair measure of the intelligence of the deaf, but there is still plenty of room for other measures. We are working now on a performance scale for little deaf children because the existing Pintner-Paterson Scale does not go down low enough; also we are working on another performance scale that will not be as cumbrous or as expensive as the present scale; we are also planning a new non-language group test for the intermediate grades and there is need for a non-language group test for the higher levels of mental ability in high school and college.

Language as a Medium.—This problem of measuring the intelligence of the deaf without the use of language shows clearly that language is only one of the media by means of which we penetrate to the intelligence of the individual. In addition to the deaf child, therefore, any child whose normal language development is interfered with will not be properly measured by means of our usual intelligence tests dependent upon language. And there are many such in this country as well as in the numerous countries all over the world possessing bilingual people. For work in this area the first step required some scale for the measurement of amount of bilingualism, for individuals vary greatly as to the amount of bilingual background. This led to the construction by

Hoffman (5) of a scale for the measurement of bilingualism. It is designed for use in this country and allows us to arrive at a score for each child, running from extremely bilingual cases where the child is surrounded by a foreign-language environment in almost all his activities to the monoglot child who can speak and understand only the English language.

With this measure available more rigorous work could be undertaken on the problem of the influence of bilingualism on mental development, by means of non-language tests already developed. There was an old theory, fairly widespread, that bilingualism arrests mental development, and two psychologists by means of intelligence tests had produced results which they interpreted in support of this theory. With our new instruments for measuring bilingual background and intelligence without language, Arsenian (1) has shown that no trace of mental retardation is discernible in the large populations tested by him. Intelligence develops normally regardless of whether one or more outlets for verbal reaction are available to the child. Bilingual children may be severely or slightly handicapped in the English language and this, of course, will show up if we measure them by our usual verbal intelligence tests. But this is no index of their real intelligence, and we have been guilty of this mistake in much of our testing.

If bilingualism, then, has no effect upon the intelligence, does it have some effect upon the growth and development of personality? Here the probem becomes much wider and enormously complicated. For now it is not a question of the language *per se,* but of the whole relationship of the bilingual group to the other culture in which this group lives. In this country our bilingual groups are surrounded by a dominant culture, a culture tending to look down upon the culture represented by foreign-language speaking groups. What effect, if any, does this have upon the personality traits of the children belonging to these other cultures? Axelrod is now engaged in measuring some aspects of the personality of bilingual groups by means of a battery of personality tests.

Thus we see how the problem of language in intelligence testing has spread out from the problem of the deaf and raised the whole question of language and mental development. Much remains to be done in this area. We come close to the whole problem of language and thinking (inner speech, imageless thought, how do we think?). Arsenian's work has raised the problem of the best time to begin the study of a foreign language. He suggests that the earlier we begin the better, that the simultaneous development of two languages may be desirable. There are many possible dissertations here. There would seem to me to be implications for the whole problem of the teaching of foreign languages in our schools. There are very decided implications with reference to the educational policies affecting our bilingual groups. Why should we take children with an Italian background and absolutely disregard their knowledge of Italian during the elementary school period, only to offer them two or three years of Latin or French or German much later on in the high school? With reference to all our foreign-language groups we fail to make their existing knowledge function in their later educational development. Would it be desirable to make it function, and, if so, how could this be done?

Psychological Traits of the Deaf.—Let us go back to my original work with non-language and performance intelligence tests. This work made possible the first surveys of the intelligence of the deaf. Many studies were made. Reamer (12) made the first survey in 1921. The most comprehensive was a survey made under the auspices of the National Research Council (3). Using the data collected by this nation-wide survey, Upshall (14) studied the problem of the day-school versus the residential school for the deaf. It is still a debatable question as to which type of school is better for the deaf, or rather which individuals can be educated in which schools to greatest advantage.

In all these studies the deaf have shown themselves below the hearing in intelligence and achievement test scores. MacKane (7) made a more detailed comparison of the deaf and hearing by means of non-language group tests and individual

performance tests, and found that the deaf approach the hearing more closely on the latter tests than they do on the former.

The original work on the construction of intelligence tests for the deaf led quite naturally to educational achievement testing. Although no special educational achievement tests have been constructed for schools for the deaf, I believe such tests would be desirable, because the deaf move along much more slowly than the hearing and to measure their progress accurately we need scales with much finer step-intervals than are in use for the hearing. Furthermore, such educational tests should be based upon the curricula of the schools for the deaf. Fusfeld is now investigating the relationship between the auditory deficiency in deaf children and their ability in reading and in the use of written language. For two very important items of instruction of the deaf, namely speech and lip-reading, we possess no measures at all. To construct objective measures of these subjects will tax the resourcefulness and ingenuity of any research worker. Silent moving-pictures should be tried as a possible means for measuring lip-reading. Research in this area will lead one on into the wide field of the significance of facial expression and gesture in communication between men. No psychologist has studied the sign language of the deaf. Perhaps some ingenious worker might develop a much more efficient one than the one they now possess. With reference to the measurement of the comprehensibility of the speech of the deaf, the difficulties here are enormous. But an objective measure of comprehensibility would be extremely useful. Some deaf children's speech is comprehensible only to their hearing associates, and it is a bitter disappointment later on in life to find that what they have acquired during long years of hard work is useless when they meet a stranger. A simple objective measure of comprehensibility would be useful in many other fields, and so this research would spread out into the work with speech defectives, foreigners speaking English, and indeed to anyone.

Not until we possess adequate objective measures of speech and lip-reading will we be able to measure the efficiency of

the education of the deaf; for upon these two accomplishments most of the energy of teachers of the deaf is now directed. Is the time and energy so expended commensurate with the results obtained? Is the oral or the manual method of teaching the deaf the best, or would some combination of these be better?

Motor and Mechanical Ability.—To educate the deaf child properly, to understand more fully the effect of deafness upon the individual, we need to know a great deal more about him than merely his intelligence and educational achievement. And so I have extended the study of the deaf into other fields. The motor ability of the deaf has been studied by Long (6) with interesting results. In almost all tests of motor dexterity the deaf are as expert as the hearing. Only in the sense of balance are the deaf markedly inferior to the hearing, and this is undoubtedly due to the impairment of the semi-circular canals in many cases of deafness. The implications of this study of Long's in the field of vocational training of the deaf are obvious.

Having measured the motor ability of the deaf, a further study of their mechanical ability was indicated. This has been started by Stanton (13). Using the Minnesota Mechanical Ability Test, she has compared hearing and deaf boys and girls. In general the deaf seem to be somewhat below the hearing, if the Minnesota norms can be relied upon. But more work in this field is indicated, and it spreads out into the wide area of the vocational training and vocational guidance of the deaf. What vocational fields offer the best opportunities for the deaf now that we have arrived at some measure of their intellectual, motor and mechanical abilities?

Personality Factors.—To be able to take one's place in life depends, however, upon more than one's abilities and one's training. Personality factors play a large part in making for an adequate adjustment. And so our studies reach out into the measurement of the personality of the deaf individual. Brunschwig (2) has made a beginning in this area with her construction of an adjustment personality inventory for deaf children. Because of the limited language ability of the deaf, none of the existing tests useful for hearing children

could be used. When deaf and hearing children are compared by means of a suitable personality inventory, the deaf group seems to be more maladjusted. They have their peculiar difficulties to overcome. More work in this area is clearly indicated. More specific diagnoses of difficulties are possible and these should lead to suggestions for treatment. Pintner and Brunschwig (10) have studied the fears and wishes of deaf children. Pintner, Fusfeld and Brunschwig (11) have experimented with a modified Bernreuter Inventory for deaf adults. The results show the possibilities of such a scale. The deaf appear to be more neurotic and less dominant than the hearing. These studies represent mere beginnings in the difficult field of personality measurement. There is room for many more studies before we arrive at a more complete understanding of the personality of the deaf child. And as we do so we shall gain insight into the peculiar problems that his deafness presents and in this way be able to help him adjust more adequately to his invironment.

The Hard of Hearing.—Research with the deaf leads naturally to work with the hard of hearing. All the problems raised with reference to the deaf are presented again with reference to the hard of hearing. This group of people is much larger than the group of deaf. As children they go to the same schools as the hearing. As adults they are confronted with the necessity for making many adjustments peculiar to them in a hearing world. Madden (8) has studied the intelligence of the hard-of-hearing school child. Habbe (4) has made a beginning in studying the personality characteristics of hard-of-hearing boys in the high school. Welles (15) and Pintner (9) have studied the personality adjustments of the hard-of-hearing adult. And at the present time there is a W.P.A. project under my direction which is concerned with many aspects of the hard-of-hearing school child. There are many psychological and educational problems in this field. Loss of hearing may come gradually, almost imperceptibly, or it may come suddenly and catastrophically. It may be slight and remain so for life, or it may be progressive up to profound deafness. It may begin early in life, or again in adolescence, in early maturity, or in middle age.

In all these different possibilities it demands certain adjustments of its victim. In some cases these adjustments seem to be made easily; in other cases major disturbances of personality take place. Early recognition of the physical handicap and an understanding of the personality of the individual are necessary. Our tests may lead to a quicker understanding of the personality make-up in each case, and thus aid the child in his adjustment to the hearing world. Instruction in lip-reading is usually considered desirable, but we have not yet studied intensively the value of such instruction both as to its effect upon the school progress of the child and upon his personality.

Other Handicapped Groups.—This work with the deaf and hard of hearing has gradually led us to plan for similar studies with other physically handicapped groups. The blind and partially sighted form a group deprived of one of the major senses as do the deaf group. What about their intelligence, educational achievement and personality? What assets do they possess that might prove advantageous to them and to the world? For we are working on the assumption that there is a place, and a desirable place, in this world for all individuals, regardless of the handicap. Some psychological work has been done with the blind, but there is much more to be done. From the blind our tentative plans stretch over to the crippled, and here the field is practically virgin territory.

But, perhaps I had better stop here, or else the ever-widening circles of research will go spreading all over the universe, and I may catch myself sentimentally gushing over Tennyson's flower in the crannied wall like a veritable commencement orator.

Future Work in These Areas.—In describing the various lines of research in which I have been interested I have indicated where I think future work lies, but I shall now summarize this more concisely.

1. *The Deaf*
   a. Further study of abilities and capacities to find out where the deaf are strongest, *e.g.*, explore such subjects

as drawing, painting, designing, modeling, ceramics, which are predominantly dependent upon vision.

b. Personality traits. Extroversion-introversion, dominance, perseveration, imagination, fears, wishes, etc.

c. Social development. Ability to get along with people, social maturity.

d. Educational achievement, including lip-reading and speech. The problem of the most suitable methods of teaching different types of deaf children.

e. Vocational training.

f. The preschool deaf child—studies of his development.

g. The sign language of the deaf.

2. *The Hard of Hearing*

The adjustment of the individual to the hearing environment. An appraisal of lip-reading in the education of the hard of hearing. Measures of all possible psychological traits.

3. *Bilingualism*

a. Further measures of amounts of bilingualism, *e.g.*, the word association technique, and others.

b. The effect of varying amounts of bilingual background upon the personality of the individual.

c. The effect of bilingual background upon the school achievement and progress of the child.

d. The possible utilization of bilingual background of the child in his educational development.

e. The optimum age for beginning the study of a foreign language.

f. The relation of language to thinking. The problem of different types of intelligence: verbal *vs.* nonverbal; abstract *vs.* concrete.

g. The relation of "inner speech" to thinking, and to the facility of learning foreign languages.

4. *Other Physically Handicapped Groups*

a. The blind. Construct measures, where these are not available, for appraising the abilities and capacities of the blind and partially sighted. A measure of their

mechanical ability is urgently needed to help in their vocational guidance.

b. The crippled. Similar psychological studies in this area.

REFERENCES

1. Arsenian, S. *Bilingualism and Mental Development.* Contribs. to Educ., No. 712. Bureau of Publications, Teachers College, Columbia University, New York, 1937.
2. Brunschwig, L. *A Study of Some Personality Aspects of Deaf Children.* Contribs. to Educ., No. 687. Bureau of Publications, Teachers College, Columbia University, New York, 1936. Also Pintner, R. and Brunschwig, L. "An Adjustment Inventory for Use in Schools for the Deaf." *American Annals of the Deaf,* 1937, 82: 152-167. Also Pintner, R. and Brunschwig, L. "Some Personality Adjustments of Deaf Children in Relation to Two Different Factors." *J. Genet. Psychol.,* 1936, 49: 377-388.
3. Day, H. E., Fusfeld, I. S. and Pintner, R. *A Survey of American Schools for the Deaf.* National Research Council, Washington, D.C., 1928.
4. Habbe, S. *Personality Adjustments of Adolescent Boys with Impaired Hearing.* Contribs. to Educ., No. 697. Bureau of Publications, Teachers College, Columbia University, New York, 1936.
5. Hoffman, M. N. H. *The Measurement of Bilingual Background.* Contribs. to Educ., No. 623. Bureau of Publications, Teachers College, Columbia University, New York, 1934.
6. Long, J. A. *Motor Abilities of Deaf Children.* Contribs. to Educ., No. 514. Bureau of Publications, Teachers College, Columbia University, New York, 1932.
7. MacKane, K. *A Comparison of the Intelligence of Deaf and Hearing Children.* Contribs. to Educ., No. 585. Bureau of Publications, Teachers College, Columbia University, New York, 1933.
8. Madden, R. *The Social Status of the Hard-of-Hearing Child.* Contribs. to Educ., No. 499. Bureau of Publications, Teachers College, Columbia University, New York, 1931.
9. Pintner, R. "Emotional Stability of the Hard of Hearing." *J. Genet. Psychol.,* 1933, 43: 293-311.
10. Pintner, R. and Brunschwig, L. "A Study of Certain Fears and Wishes Among Deaf and Hearing Children." *J. Educ. Psychol.,* 1937, 28: 259-270.
11. Pintner R., Fusfeld, I. S., and Brunschwig, L. "Personality Tests of Deaf Adults." *J. Genet. Psychol.,* 1937, 51: 305-327.
12. Reamer, J. C. *Mental and Educational Measurements of the Deaf.* Psychological Monographs, No. 131. Princeton, N.J., 1921.
13. Stanton, M. B. *Mechanical Ability of Deaf Children.* To be published shortly in the Contributions to Education Series. Bureau of Publications, Teachers College, Columbia University, New York.
14. Upshall, C. C. *Day Schools vs. Institutions for the Deaf.* Contribs. to Educ., No. 389. Bureau of Publications, Teachers College, Columbia University, New York, 1929.
15. Welles, H. H. *The Measurement of Certain Aspects of Personality Among Hard-of-Hearing Adults.* Contribs. to Educ., No. 545. Bureau of Publications, Teachers College, Columbia University, New York, 1932.

Revised Curriculum for First Preparatory Year as Compiled for the Southern Conference of Executives of Schools for the Deaf—II[1]

Fourth Six Weeks

I. *Speech Reading*

A. Nouns

76. a bird
77. the grass
78. a valentine
79. a boat
80. a marble
81. a kite
82. a rabbit
83. a bed
84. some money
85. a desk
86. the cabinet—closet
87. some cookies
88. a cup
89. some beans
90. some soup
91. some gum
92. an egg
93. some soap
94. a towel
95. a balloon

B. Commands

Put ..... in ..... Put ..... on .....
Put ..... under .....

While we recognize the fact that *INTO* correctly follows verbs of motion, there are relatively few cases in which the shorter *IN* is not acceptable. This has proven of considerable value socially in the school activities.

C. Adjectives: Fat, thin, pretty, new, cross, sleepy

D. Numbers: Six, seven, eight

E. Calendar: Days of the week

F. Dictation

1. Elements, combinations and nouns as for speech
2. Sentences

---

[1] Continued from the March Annals, pp. 103-113. The first half of the First Preparatory Year presented the units of work for the first three successive six-weeks periods.

II. *Silent Reading*

A. Class work

1. Vocabulary: All vocabulary, nouns and commands, given for speech reading
2. Language
   (a) Pronouns: Me, us, him, her it
   (b) Commands:
   Put ..... in .....
   Put ..... on .....
   Put ..... under .....
   (c) Question forms

   What is on .....? What is under.....?
   What is in .....? Where is .....?

   (d) Class experience worked up on charts (at least three)

B. Seat work: Draw—with prepositions

Ex. Draw a table.
Draw a cat under the table.
Color the cat black.

C. News: Use daily news board. Lose no opportunity to fix vocabulary previously taught

III. *Speech*

A. Elements: -i-, a-e, sh, x, z, h

B. Combinations

1. Two syllables, using unaccented -i- in the final syllable
2. Three syllables with accent falling on first, second, or third syllable

C. Vocabulary

1. Nouns: A top, a card, a baby, a shoe, a letter, a coat, a horse, a mouse, a fish, a box, some candy, a sheep, a book
2. Pronouns: We, me, he, she, us
3. Preposition: To

4. Verbs: Threw, found, went to walk, took a walk, gave, bought, came
5. Number: One, two, three, four, five
6. Expressions: I am well. I love you.

D. Rhythm
1. Perception of pitch: Add medium
2. Voice work
   (a) Accent
   (b) Resonance
      1. Humming
      2. Combinations with *m, n, ng*
   (c) Volume: Add *sh*
3. Time work: Counting

IV. *Language*

A. Action work, spoken and written in the five slates, using all verbs, nouns, and prepositions

B. Class journals of two and three sentences, reproduced individually from elliptical sentences. The subject of each sentence should be left on the board for reference.

V. *Social Adjustment*

See program of First Six Weeks, ANNALS, March 1938 (vol. 83, no. 2), pp. 108-9.

FIFTH SIX WEEKS

I. *Speech Reading*

A. Nouns
1. Additional nouns as needed
2. Representative plurals

B. Questions
1. Is .....? Are .....?
   Has .....? Have .....?

C. Picture Description, using *is* and *have*

Ex. The baby is sleepy.
The baby has a doll.

D. Dictation: Combinations, words, and sentences

II. *Silent Reading*

A. Class Work

1. Vocabulary
2. Language
   (a) Class experiences worked up on charts
   (b) Picture descriptions using *is* and *have*
   (c) Questions

   1. Is .....? Are .....?
   2. Has .....? Have .....?

B. Seat work

1. Further work with prepositions
2. Questions as in speech reading
3. Work on year books

C. News: Continue work on daily news items

III. *Speech*

A. Elements .....*ng*

B. Combinations

1. Initial *s* with one other consonant
2. Initial *fl* and *pl*
3. Final *ble*

C. Vocabulary

1. Nouns: Some water, a doll, the moon, a rabbit, a house, a knife, a boat, a star, a tree, a marble, a fork, a bird, a flower, a bee, some bread
2. Verbs: Has-have, made, caught, went, played, picked, wrote, cried
3. Pronouns: It, they, them, him, her
4. Adjectives: Sick, happy, well (*well* previously given as expression for letter writing)
5. Numbers: Six, seven, eight, nine, ten
6. Time words: Days of the week
7. Expressions: Goodbye, I forgot, I am through, Thank you, May I go?

D. Rhythm
   1. Stress volume: Increase and decrease sounds
   2. Pitch: High, low, medium
   3. Verse:
      The dog says, "Bow-wow-wow."
      The cat says, "Meow-meow-meow."
      The sheep says, "Baa-baa-baa."
      The cow says, "Moo-moo-moo—Milk for you!"

IV. *Language*

A. Action work
   1. Compound subject
   2. Compound predicate

B. Journals of three or four sentences, paragraphed according to time

C. Class letters

V. *Social Adjustment*

See program of First Six Weeks, ANNALS, March 1938 (vol. 83, no. 2), pp. 108-9.

SIXTH SIX WEEKS

I. *Speech Reading*

A. Nouns as needed

B. Two nouns at a time: A ball and a top

C. Commands: Two at a time—Get a doll and give it to Marilyn.

D. Questions: How many .....? What color .....?

E. Stories of two and three sentences about pictures. Children select picture which fits the story. Pictures should have certain similar characteristics

F. Dictation: Two and three short sentences at a time

II. *Silent Reading*

A. Review and amplification of previous work

B. Questions: How many .....? What color .....?

C. Picture stories of three and four sentences

D. Stories using ellipses
Ex. A boy had ..... He threw it.

E. Seat work
1. Review of year's work
2. Year book work

III. *Speech*

A. Nouns: Some pie, home, eye, nose, some milk, some meat, a dog, a cat, some gum, a spoon, a pencil, some ice cream, some money; *others as needed*

B. Verbs: Pushed, hit, laughed, liked, broke, tore, lost

C. Adjectives: Names of colors; good, bad, fat, thin, big, little

D. Preposition: With

E. Rhythm: Thorough review of work of the year

IV. *Language*

A. Action work using descriptive adjectives

B. Class journals of five and six sentences, using past, negative, and future tenses when needed

C. Class letters

D. Simple topics

V. *Social Adjustment*

See program of First Six Weeks, ANNALS, March 1938 (vol. 83, no. 2), pp. 108-9.

SUMMARY OF WORK

Children completing the course outlined for the first preparatory year should have a comprehension vocabulary of at least two hundred words, and a minimum working vocabulary of one hundred fifty words.

I. *Speech Reading*

A. Nouns—about one hundred twenty-five

B. Commands—about fifty

C. Adjectives—names of the colors, and about fifteen other simple adjectives

D. Numbers—one to ten

E. Stories—of three to five sentences should be comprehended, but not reproduced

F. Time work—today, yesterday, tomorrow; days of the week

II. *Silent Reading*

See Speech Reading

III. *Speech*

A. Vowel chart—all primary spellings completed

B. Consonant chart—all primary spellings except *qu, ch, j,* and *zh*

C. Nouns—About sixty, exclusive of time words and proper names

D. Verbs—About thirty

E. Pronouns—All nominative and objective forms of the personal pronouns, with a few possessives as have been needed.

F. Adjectives—about fifteen, including colors

G. Prepositions—two

H. Numbers—one through ten

I. Rhythm: Perception of vibration, time, gross pitch; Voice work: Accent, volume, pitch

IV. *Language*

A. Journals and letters of four and five sentences

B. Simple stories

C. Question forms:

Who .....? Where .....? Has .....?

Have .....? Is ..... Are .....?

What did ..... do? How many .....?

What color .....?

V. *Social Adjustment*

See program of First Six Weeks, ANNALS, March 1938 (vol. 83, no. 2), pp. 108-9.

A Prayer at Twilight

W. T. Griffing, B.A.
Oklahoma School for the Deaf, Sulphur, Oklahoma

Father, to You of tender mercies, of unending grace,
For myself, alone, I lift not my face;
Instead, for all of these bewildered ones
So very dim of hearing, so very slow of tongue,
Those who as they go along lose much
Of gladsome song, yet try to keep that human touch—
For all these, Father, do I humbly ask:
Strength and purpose for life's many tasks.

Pray, give to each of them an open, honest mind,
A fighting heart, a face which always shines;
Let them early learn the joy of wholesome work,
Of a spirit glad to serve, too proud to shirk;
Let each one some day preside at a friendly hearth,
Surrounded by a family, aglow with love and mirth—
Please, won't You heed those outstretched hands,
And hold to all till they shall reach Your Land?

The Social Competence of Deaf and Hard-of-Hearing Children in a Public Day-School

By ALICE STRENG, M.A., *and* SAMUEL A. KIRK, PH.D.[1]

Division of Education of Exceptional Children
Milwaukee State Teachers College
Milwaukee, Wisconsin

INTRODUCTION

THE effect of hearing loss on intelligence, educational achievement, personality, behavior, and vocational placement has long been of interest to workers among the deaf and hard of hearing. Psychological and sociological studies have attempted to determine how defective hearing affects the individual and to discover characteristics peculiarly associated with auditory deficiency. Most of these studies make comparisons of the deaf and hard of hearing with normally hearing individuals and some of them have ascertained that the deaf deviate to a considerable extent from standards for normal individuals. Pintner (9) has shown that the deaf are inferior to normally hearing children in intelligence, although some research workers, Drever and Collins (7), disagree with these conclusions. In personality reactions also some differences have been noted. Pintner (10) has found upon the basis of personality test scores that the deaf are emotionally more unstable, and Kirk (8) has presented evidence that the emotional reactions of deaf and hard-of-hearing children exceed those of hearing children.

A very significant problem from the psychological and educational point of view is the question of whether or not hearing loss affects social competence. Doll (6) has recently

[1] The authors wish to acknowledge their indebtedness to Dr. Milton C. Potter, superintendent of the Milwaukee Public Schools, for his kind permission to carry on the investigation, and to Miss Sadie I. Owens, principal of the Paul Binner School for the Deaf, for her generous aid and co-operation in this study. The assistance of Winifred Day Kirk in administering the Grace Arthur Scale is greatly appreciated.

standardized the Vineland Social Maturity Scale which attempts to measure the social competence of individuals. The scale was standardized on 620 normal persons with ten individuals of each sex at all age levels from birth to 25 years. The scale purports to measure such factors as: 1. self-help in general; 2. self-help in eating and dressing; 3. self-direction; 4. occupation; 5. communication, and 6. socialization.

In applying the Vineland Social Maturity Scale to mentally deficient children Doll (5) found a difference between mentally handicapped children in institutions and those in special classes. He found that 38 special class children (having a mean IQ of 63) had a mean SQ* of 78. A similar group of institutionalized children (having a mean IQ of 61) had a mean SQ of only 57. In other words, the mean SQ of special class children exceeded their mean IQ by fifteen points, whereas the mean SQ of the institutionalized children was four points lower than their mean IQ.

In administering the Vineland Social Maturity Scale to 92 pupils of the New Jersey School for the Deaf Bradway (2) found that the scale could be used with deaf children. She found that the mean SQ of the deaf children was 80.7. She thereupon concluded that deaf children were approximately twenty points below normal children in social competence, and that ". . . in order for a deaf individual to be average in social competence, that is to have an SQ of 100, he must be endowed with a superior intellectual capacity represented by a potential IQ of about 125" (p. 128). It should be noted that no data on intelligence tests were presented in this study, but it was assumed by Bradway that the group had average intelligence.

Problem

The literature on social competence and studies of social maturity, especially that of Bradway's on the deaf, raise the following questions which the present investigation will attempt to answer:

---

* Social Maturity Quotient; obtained by dividing the social maturity age by the chronological age.

1. Are the deaf and hard-of-hearing children decidedly low in social maturity?
2. What is the relationship between intelligence and social maturity?
3. Is there a difference in social maturity between hard-of-hearing and deaf children?
4. Is there a difference between the sexes?
5. What effect has age on social maturity?
6. Does age of onset of deafness affect social maturity?

Procedure

Ninety-seven deaf and hard-of-hearing children at the Paul Binner Day-School for the Deaf in Milwaukee were used in this study. Scores on the Doll Social Maturity Scale (6) were obtained through interviews with the mothers or guardians of these children. In addition to the Social Maturity Scale, two intelligence tests were administered. Every member of the group was given the Grace Arthur Performance Scale (1), a non-language individual intelligence test, while 87 of the children were given the Chicago Non-Verbal Examination (3), a group intelligence test. 2A audiometer tests were also administered to the children.

The children of this study live at home with their parents and go to and from school in busses or by street car. All of them with the exception of three cases live in an atmosphere of English speaking people and have social contacts with normally hearing children in their homes and neighborhood environments. Three children (siblings) included in this study have deaf parents but communicate by means of speech.

Results

1. *Social Competence of the Group.*—In view of the fact that Bradway found deaf children significantly inferior to normally hearing children, the data of our study were analyzed to determine if the same results could be found in a day-school for the deaf. The results are presented in Table I.

The distribution of the 97 SQ's of Table 1 shows a strik-

ing similarity to Doll's original distribution in which the mean was 100 and the SD 12. Table 1 shows the mean SQ of the 97 day-school pupils to be 96.2 with an SD of 12.8.

TABLE I

THE DISTRIBUTION OF SQ'S OF 97 DEAF AND HARD-OF-HEARING CHILDREN IN A PUBLIC DAY-SCHOOL

Class Interval of SQ's	*Frequency*		
60– 69	1		
70– 79	8		
80– 89	21		
90– 99	36	Mean SQ	96.2
100–109	20		
110–119	7	SD_{dis}	12.8
120–129	1		
130–139	2		
140–149	1		
	Total 97		

This is quite different from Bradway's results of a mean SQ of 80.7 and an SD of 11.3. It appears, then, that the SQ's for the children of this survey deviate markedly from the results obtained by Bradway. The SQ's of the present study approach, rather, the scores of normally hearing children.

2. *The Relation of Intelligence to Social Competence.*— By giving intelligence tests to the group of children in question the necessity of guessing or assuming some particular level of intelligence has been eliminated. Table II shows a comparison between the mean IQ's of the group (as tested by the Grace Arthur Performance Scale) and the SQ's.

TABLE II

A COMPARISON OF MEAN IQ'S (GRACE ARTHUR) AND SQ'S FOR 97 CASES

	Grace Arthur IQ	*Vineland Social Maturity SQ*	*Mean diff.*	*SD diff.*	*Critical Ratio*
Means	100.9	96.2	4.7	2.25	2.1
SD_{dis}	18.02	12.8			
SD_{mean}	1.83	1.3			

It will be seen from Table II, that the difference between the two means is 4.7. Since the standard error of the difference is 2.25 and the critical ratio 2.1, we cannot consider the two means significantly different. This difference between the mean SQ and IQ is decidedly smaller than Bradway's difference of twenty points and does not coincide with her assumption that for a child to have an SQ of 100 he must have a potential IQ of 125. Her results might be explained either by the possibility that the intelligence of her subjects was low or that day-school deaf children tend to make higher scores in social maturity just as do mentally deficient children attending special classes.

As a further confirmation of the results given above, 87 of the children were given the Chicago Non-Verbal Examination, a non-language group intelligence test. Table III shows the results of this test, together with a comparison of the mean SQ and the mean IQ.

TABLE III
A COMPARISON OF MEAN IQ (CHICAGO NON-VERBAL) AND MEAN SQ FOR 87 CASES

	Chicago Non-Verbal IQ	*Vineland Social Maturity SQ*
Means	95.5	95.3
SD	16.3	12.3

The similarity between the mean of the Chicago Non-Verbal IQ and the mean SQ in Table III is very striking. Because of this similarity one may safely conclude from the results that the day-school pupils in our study are as average in their social competence as in their intelligence.

A further analysis of the data showing correlations between the various tests is presented in Table IV.

TABLE IV
INTER-CORRELATIONS OF THE GRACE ARTHUR IQ, THE CHICAGO NON-VERBAL IQ AND THE SQ

Grace Arthur IQ and Chicago Non-Verbal IQ (N = 87)	$r = .65 \pm .04$
Grace Arthur IQ and SQ (N = 97)	$r = .29 \pm .06$
Chicago Non-Verbal IQ and SQ (N = 87)	$r = .29 \pm .06$

As can be seen from Table IV there is a fairly high positive correlation between the two intelligence tests and a low positive correlation between each intelligence test and the social maturity scale. This is different from Doll's (4) correlation of .81 obtained between SQ's and Binet IQ's of mentally deficient children. The discrepancy between our results and Doll's may possibly be explained by the types of intelligence tests given. Doll used a language test whereas two non-language intelligence tests were used in this study.

3. *The Difference between the Deaf and the Hard of Hearing.*—It should be noted that we have combined the results of the tests for both the deaf and the hard-of-hearing children, whereas in Bradway's study only totally deaf children were used. To determine whether the degree of deafness has any effect on social maturity, a further analysis of our results was made. The children were divided into two groups according to the extent of their hearing defect as determined by the 2A audiometer test and according to the educational procedures employed in teaching them. The mean hearing loss for the best ear of the deaf group was 71.7, and the mean hearing loss for the best ear of the hard-of-hearing group was 46.2, as tested on the 2A audiometer. Table V

TABLE V

A COMPARISON OF IQ'S AND SQ'S OF DEAF AND HARD-OF-HEARING CHILDREN

	Mean IQ Grace Arthur	*Mean IQ Chicago Non-Verbal*	*Mean SQ Vineland Scale*	*Mean diff. SQ*	*SD diff. SQ*	*Critical Ratio*
46 hard of hearing	101.5	96.3	95.87	.64	2.64	.24
51 deaf	100.2	94.6	96.51			

shows comparisons of mean IQs and SQs for the deaf and hard-of-hearing groups.

Table V presents the mean IQ's and the mean SQ's of 46 hard-of-hearing children and 51 deaf children. The mean IQ's on the Grace Arthur test and on the Chicago Non-

Verbal test are practically the same for both groups since they do not vary much over one point. The mean SQ's for both groups are also very similar since they vary less than one point. From these results it may be concluded that there is no difference between the deaf and the hard of hearing either in intelligence or in social competence. The degree of hearing defect does not therefore appear to affect the scores on the Vineland Social Maturity Scale.

4. *Sex Differences.*—Although Doll has used items that do not differentiate between the sexes for his social maturity scale, our data were also analyzed to see if sex differences exist in this group. Table VI shows the means, the difference of the means, standard errors of the means, and the critical ratios for boys and girls for both the IQ's and the SQ's.

Table VI shows that the boys have slightly higher mean IQ's on both intelligence tests and that the girls have a

TABLE VI

A COMPARISON OF MEAN IQ'S AND MEAN SQ'S OF BOYS AND GIRLS

	Mean IQ Grace Arthur	*Mean IQ Chicago Non-Verbal*	*Mean SQ*
47 Girls	98	94	98.1
50 Boys	103.5	97.1	94.5
Mean diff.	5.5	3.1	3.6
SD diff.	3.57	3.56	2.57
Critical ratios	1.5	.87	1.4

slightly higher mean SQ. The critical ratios, however, show no reliable differences between boys and girls on any of the tests since all critical ratios are 1.5 or less. We may conclude, therefore, that among these day-school children boys and girls are about equal both in intelligence and in social maturity. This agrees with Doll's conclusions concerning sex differences in normal subjects.

5. *Relation of Age to Social Competence.*—The question of whether age *per se,* has any effect on social maturity led to

an analysis of the data with reference to this point. Table VII shows the distribution of the SQ's according to the ages of the 97 children.

It may be seen from Table VII that the differences in SQ's are slight between the ages of nine and seventeen, but that there appears to be a difference between those below nine

TABLE VII
AGE DISTRIBUTION OF SQ'S

Age	*Number*	*Median SQ*
6–0 to 6–11	5	108
7–0 to 7–11	4	125
8–0 to 8–11	4	105
9–0 to 9–11	10	98
10–0 to 10–11	15	97
11–0 to 11–11	12	93
12–0 to 12–11	15	90
13–0 to 13–11	8	100
14–0 to 14–11	8	99
15–0 to 15–11	8	95
16–0 to 16–11	5	98
17–0 to 17–11	2	84.5
18–0 to 18–11	1	86

and those above seventeen. Since only a few cases (three above seventeen, and thirteen below nine) are represented at the extremes, it is not known that this difference is valid. Until further data are available, it cannot be concluded that there is an age difference on the Social Maturity Scale.

6. *Age of Onset of Deafness and SQ.*—In 26 of the deaf children definite information was available that the onset of deafness occurred before 2½ years of age. The mean SQ of the 26 deaf children who became deaf before the age of 2½ was 96.1. This compares closely with the mean SQ of 96.2 for the whole group. Therefore, it may be concluded that age of onset of deafness had no effect on the social maturity scores in our group.

DISCUSSION

An examination of the results of two intelligence tests and the Vineland Social Maturity Scale showed that our group of deaf and hard-of-hearing children was average in intelligence as well as in social maturity. These results differ from

the results of Bradway which showed that the deaf in a residential school are twenty points below normally hearing children in SQ (social maturity quotient).

Two hypotheses may be offered to explain the discrepancy between the results of Bradway and those of this study.

First, in the Bradway study no intelligence tests were given but the intelligence of the group was assumed ("having no evidence to the contrary") to be average. Since in the present study the mean of the SQ was similar to the means of our IQ's it may be possible that the group studied by Bradway was below average in intelligence. That may explain why her mean SQ was around 80.

A second explanation may be found in a possible difference between day-school populations and residential school populations. Upshall (11) has shown that day-schools for the deaf select the brighter pupils and that educational achievement in day-schools is higher than that found in institutions. Since our situation differed from Bradway's in the type of school studied, it is plausible that the day-school either selects the more socially mature child or that children living at home become more socially mature than institutionalized children. This explanation becomes even more plausible when we recall that special class mentally deficient children have higher SQ's than institutionalized children of the same intelligence (Doll).

It should be remembered that these results do not argue against residential institutions for the deaf. We do not have the data to show that it is the day-school that makes the children socially mature. It may be that the day-school selects children who are more socially mature. An answer to this question would require that children be tested before they enter either type of school, and then be tested again after they have been in attendance for a number of years.

Summary and Conclusions

Ninety seven deaf and hard-of-hearing children (ages six to eighteen) in a public day-school for the deaf were given (1). the Grace Arthur Performance Scale, (2). the Chicago

Non-Verbal Examination, and (3). the Vineland Social Maturity Scale. The following results were obtained:

1. The group was average in intelligence since the mean IQ on the Grace Arthur Scale was 100.9 and on the Chicago Non-Verbal Test, 95.5.

2. The group was approximately average in SQ (Social Maturity Quotient). The mean SQ for the group was 96.2 with an SD of 12.8. This is very similar to Doll's normal hearing group which had a mean SQ of 100 and an SD of 12.

3. There was a low positive correlation between the IQ's and the SQ's. The correlation between the Grace Arthur IQ and the SQ was +.29; between the Chicago Non-Verbal IQ and the SQ +.29; between the two intelligence tests +.65.

4. There was no difference between the deaf and the hard-of-hearing children either in intelligence or in SQ. The mean SQ for the 51 deaf children was 96.5, and for the 46 hard-of-hearing children 95.9.

5. There was no significant sex difference either in intelligence as measured by the two intelligence tests or in SQ's.

6. There was no significant age difference in SQ's.

7. Age of onset of deafness seemed to have no effect on the SQ. For 26 children who became deaf before the age of two and one half years the mean SQ was 96.1. This mean compares closely with 96.2, the mean of the total group.

8. The discrepancy between these results and previous studies which indicated that the deaf were inferior in social competence is explained in one of the following ways: Either (a) the children previously studied were also inferior in intelligence, or (b) deaf children in day-schools are higher in social competence than deaf children in residential institutions.

REFERENCES

1. Arthur, G. *A Point Scale of Performance Tests,* The Commonwealth Fund, Division of Publications, Vols. 1-2, 1930.
2. Bradway, K. P. "The Social Competence of Deaf Children," *American Annals of the Deaf,* 1937, 82: 122-140.
3. Brown, A. W. *Chicago Non-Verbal Examination,* Institute for Juvenile Research, Chicago, Ill., 1936.
4. Doll, E. A. "The Measurement of Social Competence," *Proceedings of 59th Annual Session of the American Association on Mental Deficiency* held at Chicago, Illinois, April 25-27, 1935.

5. Doll, E. A. "The Social Competence of Special Class Children," *J. Educ. Research,* 1937, 31: 90-106.
6. Doll, E. A. *The Vineland Social Maturity Scale,* Revised Condensed Manual of Directions, Publication Vineland Training School at Vineland, N.J., Department of Research, Series No. 3, 1-30, April, 1936.
7. Drever, J., and Collins, M. *Performance Tests of Intelligence.* Oliver and Boyd, London, 1928.
8. Kirk, S. A. "Behavior Problem Tendencies in Deaf and Hard-of-Hearing Children," *American Annals of the Deaf,* 1938, 82: 131-137.
9. Pintner, R. *Intelligence Testing; Methods and Results.* Henry Holt and Company, New York, 1931.
10. Pintner, R. "Latest Phases of Psychological Testing with the Deaf," *American Annals of the Deaf,* 1937, 82: 327-337.
11. Upshall, C. C. *Day Schools vs. Institutions for the Deaf.* Contribs. to Educ. No. 389. Bureau of Publications, Teachers College, Columbia University, New York, 1929.

A Comparative Study of the Behavior Traits of Deaf and Hearing Children of New York City[1]

By N. Norton Springer, Ph.D.
Adolescents' Court of Brooklyn, New York

Introduction

The importance of personality factors in the life of the individual has been called to the attention of psychologists and educators within recent years. The rôle played by emotional, social, physical, and neurotic traits, reaction patterns and attitudes in the adjustment and success of the individual is perhaps of equal, and in many instances, of even greater, importance than the factors of intellectual and educational achievement.

While a great deal of research has been conducted on the personality of hearing children, very little has been done in regard to the deaf. This may be due to the fact that most studies of personality factors are made with verbal tests. These are usually questionnaires, which are unsuitable for use with the deaf, especially the younger deaf children, who are unable to read. The following study of the behavior traits of deaf and hearing children attempts to overcome the language difficulty by use of the rating scale method for the measurement of personality. Rating methods are available for the measurement of personality traits, and they are accepted as valid and reliable (6, p. 52). Through the cooperation of teachers who were well acquainted with the children included in this study, it was possible to use the rating method.

The Problem

The purpose of this study is to determine whether deaf and hearing children differ from each other on certain standardized scales which measure various phases of personality. The specific questions which this study attempts to answer are:

1. Are there group differences between deaf and hearing

[1] From the Psycho-Educational Clinic of New York University.

children in such aspects of personality as are measured by the incidence of undesirable behavior?

2. Do deaf and hearing children differ on a variety of personal characteristics which may be classified as intellectual, physical, social, and emotional traits?

The Testing Program

The Haggerty-Olson-Wickman Behavior Rating Schedules (3, 4, 5, 7) were selected as the principal tools of research for this study because of their high degree of reliability and the ease of their applicability by school teachers. These behavior scales consist of two parts. Schedule A, The Behavior Problem Record, is designed to locate problem children through a record of overt behavior problems. The Behavior Rating Scale, Schedule B, consists of personal characteristics on a variety of traits, regardless of whether or not the behavior described would be called a behavior problem. This schedule is subdivided into four divisions: 1. physical; 2. intellectual; 3. emotional; and 4. social traits. The Haggerty-Olson-Wickman Behavior Schedules emphasize behavior of an aggressive type. This behavior is overt and the teacher can easily recognize it. The scales, however, miss certain non-aggressive types of nervous and emotional disorder.

In the spring of 1935, conferences were held with the principals and administrative officials of the schools where this experiment was conducted. The purpose of this study and the rating schedules were carefully explained and discussed. Since it was impossible to hold a meeting with all the teachers who were to make the ratings, it was decided to distribute to them the Haggerty Rating Schedules, and the standardized directions for administration. They were then allowed one week in which to become familiar with the material. The teachers were asked not to rate their children during this period, but to note any questions that they might have. At the end of this period, each teacher was interviewed, and the purpose of this study was explained to her. An attempt was made to secure the teacher's interest and full co-operation. No teacher was forced to make any ratings unless she was willing to do so. She was then asked to fill out rating

schedules for each child in her class. The teacher received specific instructions to compare each child with hearing children of his own age, in all the trait ratings of Schedule B. Each child rated was known to the teacher for a period of at least four months.

The Goodenough Drawing-of-a-Man Intelligence Test (2) was also given to the deaf and hearing children in order to equate the groups and to study the effect of intelligence on behavior traits. The general social status of the deaf and hearing was determined by use of the Barr Scale of Occupational Status (1) of the children's parents.

The Subjects

Teachers' ratings on the Haggerty Schedules were obtained for all the children attending three New York City public day and residential schools for the deaf. It was impossible to get reliable ratings on hearing children above the sixth grade. It was, therefore, decided to limit this study to children between the ages of six and twelve. Ratings were obtained on 377 deaf and 415 hearing children of this age range. Both groups were selected on the basis of chronological age, sex, intelligence, general social status and nationality.

A comparison of the personal data of the deaf and hearing groups is presented in Table I.

Table I

Chronological Age, Intelligence, and General Social Status of the Deaf and Hearing Groups

	Group	Deaf			Hearing			$M_D - M_H$	SD_{diff}	Critical Ratio
		Mean	SD	N	Mean	SD	N			
Chronological age	Boys	9.34	2.03	214	9.31	1.76	215	.03	.18	.17
	Girls	9.63	1.87	163	9.38	1.54	200	.25	.18	1.39
	Total	9.45	1.99	377	9.34	1.67	415	.11	.13	.85
Good-enough Score	Boys	24.39	10.32	182	25.26	9.81	160	− .87	1.07	.81
	Girls	25.51	9.77	148	27.77	7.59	170	−2.26	.99	2.28
	Total	24.89	10.08	330	26.55	8.83	330	−1.66	.73	2.28
Barr Score	Boys	8.46	3.01	178	7.64	2.79	146	.82	.33	2.48
	Girls	8.44	2.74	136	8.26	2.89	143	.18	.33	.55
	Total	8.45	2.89	314	7.94	2.85	289	.51	.23	2.22

Chronological Age and Sex.—The mean differences in chronological age between the deaf and hearing are very slight. The deaf boys and girls are .03 and .25 of a year older than the hearing boys and girls. The mean age of the entire deaf group, 9.45, is but .11 of a year older than the hearing control. The critical ratios indicate that the mean differences are statistically insignificant.

Intelligence Scores.—Both the deaf and hearing children receive similar test scores on the Goodenough Drawing-of-a-Man Intelligence Test. The mean for the total hearing groups, 26.55, is less than two points greater than that received by the deaf children, 24.89. This difference is not statistically significant.

General Social Status.—According to the opinion of the teachers who rated the deaf and hearing groups, the children included in this study came from poor families who were, on the whole, below average in general social status. Besides the subjective opinion of the teachers, information in regard to the parents' occupations was available for most of the children. This, however, was lacking with many of the younger hearing children. The Barr Scale was used to evaluate the occupational status of the children's fathers. An analysis of these results shows very little difference between the deaf and hearing groups. The parents of the deaf children, especially those of the deaf boys, obtain slightly higher ratings. But the differences between the deaf and hearing groups are not of statistical significance.

Nationality.—The deaf and hearing groups were composed of American-born white children. With a few exceptions, all were born and reared in New York City. Approximately 90 per cent of both groups were of foreign-born parentage.

These results indicate that the deaf children and their hearing controls were very similar and comparable on the factors of age, sex, intelligence, general social status, and nationality.

The Results

1. Schedule A, The Behavior Problem Record.—Schedule A of the Haggerty Behavior Schedules was used in order to

TABLE II

RESULTS OF DEAF AND HEARING CHILDREN, BY AGE AND SEX, ON THE HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCHEDULES

Test	Group	Age in Yrs.	Deaf			Hearing			$M_D - M_H$[2]	SD_{diff}	Critical Ratio
			Mean[1]	SD	N	Mean[1]	SD	N			
Schedule A, The Behavior Problem Record	Boys	6	29.62	21.00	26	22.00	27.00	14	7.62	8.20	.93
		7	26.73	25.45	22	23.24	25.20	25	3.49	7.36	.47
		8	21.00	20.56	32	27.61	29.94	36	− 6.61	6.02	1.09
		9	32.10	28.97	29	33.40	34.00	35	− 1.30	7.85	.17
		10	39.08	35.00	24	34.67	24.09	44	4.41	8.36	.53
		11	33.60	28.70	40	28.64	22.48	33	4.96	5.96	.83
		12	30.22	26.29	41	23.00	24.00	28	7.22	6.09	1.19
	TOTAL BOYS		30.15	27.21	214	28.68	27.41	215	1.47	2.63	.56
	Girls	6	19.73	16.55	11			5			
		7	22.56	25.67	18	8.91	5.09	22	13.65	6.10	2.24
		8	17.11	19.44	18	25.81	21.88	32	− 8.70	5.96	1.46
		9	17.96	15.83	23	23.86	20.05	44	− 5.90	4.46	1.32
		10	21.56	22.40	25	26.25	31.50	48	− 4.69	6.29	.74
		11	15.97	16.87	39	17.62	19.79	29	− 1.65	4.50	.37
		12	21.00	16.21	29	21.70	11.90	20	− .70	3.97	.18
	TOTAL GIRLS		19.28	19.33	163	21.70	22.54	200	− 2.42	2.19	1.11
	BOYS & GIRLS		25.46	24.69	377	25.31	25.40	415	.15	1.76	.86
Schedule B, The Behavior Rating Scale	Boys	6	77.12	21.81	26	81.71	23.14	14	− 4.59	7.49	.61
		7	71.91	15.95	22	74.90	20.52	25	− 2.99	5.33	.56
		8	75.69	17.72	32	87.25	22.00	36	−11.56	4.83	2.39
		9	79.12	22.66	29	87.76	22.89	35	− 8.64	5.73	1.51
		10	75.50	17.25	24	82.69	19.67	44	− 7.19	4.47	1.69
		11	73.78	15.08	40	78.23	19.36	33	− 4.45	4.16	1.07
		12	78.06	19.54	41	75.93	17.68	28	2.13	4.46	.48
	TOTAL BOYS		75.85	18.93	214	81.72	21.22	215	− 5.87	1.93	3.04
	Girls	6	71.13	18.00	11			5			
		7	75.50	23.00	18	65.41	14.73	22	10.09	6.05	1.67
		8	70.00	17.50	18	73.16	16.31	32	− 3.16	5.01	.63
		9	69.11	18.00	23	73.59	18.41	44	− 4.48	4.61	.97
		10	79.94	12.60	25	69.88	16.69	48	10.06	3.47	2.89
		11	72.27	13.38	39	71.36	17.38	29	.91	2.42	.38
		12	71.67	11.17	29	74.90	15.75	20	− 3.23	4.07	.79
	TOTAL GIRLS		71.60	15.90	163	71.57	16.88	200	.03	1.71	.02
	BOYS & GIRLS		74.01	17.81	377	76.83	19.91	415	− 2.82	1.33	2.12
Division I, Intellectual Traits	Boys	6	17.08	5.85	26	22.29	6.57	14	− 5.21	2.09	2.49
		7	16.36	6.18	22	18.64	6.40	25	− 2.28	1.82	1.25
		8	18.25	6.38	32	21.89	7.00	36	− 3.64	1.61	2.26
		9	19.52	8.00	29	20.86	6.97	35	− 1.34	1.86	.72
		10	17.50	5.00	24	19.12	5.77	44	− 1.62	1.36	1.19
		11	17.60	5.20	40	18.61	6.30	33	− 1.01	.83	1.22
		12	18.39	6.05	41	18.71	6.57	28	− .32	1.48	.22
	TOTAL BOYS		17.91	6.21	214	19.86	6.64	215	− 1.95	.61	3.20
	Girls	6	16.91	4.73	11			5			
		7	16.67	6.89	18	16.36	5.45	22	.31	1.97	.16
		8	17.78	4.22	18	17.13	6.25	32	.65	1.49	.44
		9	17.83	6.26	23	17.73	5.91	44	.10	1.57	.06
		10	18.64	5.44	25	16.17	7.33	48	2.47	1.50	1.65
		11	16.46	4.31	39	16.62	5.52	29	− .16	1.22	.13
		12	16.27	4.83	29	19.60	5.60	20	− 3.33	1.52	2.19
	TOTAL GIRLS		17.17	5.35	163	17.04	5.88	200	.13	.58	.22
	BOYS & GIRLS		17.59	5.87	377	19.54	4.68	415	− 1.95	.38	5.13

[1] Small scores are "better," large scores "worse."
[2] A negative sign is used in this column to represent a difference in favor of the deaf.

TABLE II (*Continued*)

Test	Group	Age in Yrs.	Deaf			Hearing			$M_D - M_H$[2]	SD_{diff}	Critical Ratio
			Mean[1]	SD	N	Mean[1]	SD	N			
Division II, Physical Traits	Boys	6	14.23	3.46	26	15.07	3.64	14	− .84	1.18	.71
		7	12.64	3.41	22	13.70	3.12	25	− 1.06	.95	1.12
		8	14.47	4.41	32	16.17	3.92	36	− 1.70	1.01	1.68
		9	14.36	4.24	29	16.27	4.46	35	− 1.91	1.09	1.75
		10	14.50	4.13	24	15.57	4.53	44	− 1.07	1.08	.99
		11	13.48	3.38	40	14.77	3.73	33	− 1.29	.84	1.54
		12	15.13	3.73	41	14.32	2.79	28	.81	.81	1.00
	TOTAL BOYS		14.18	3.91	214	15.75	4.00	215	− 1.57	.38	4.13
	Girls	6	14.14	4.36	11			5			
		7	13.50	3.50	18	12.64	2.73	22	.86	1.00	.86
		8	13.83	3.33	18	14.09	3.09	32	− .26	.95	.27
		9	11.85	1.83	23	14.82	5.32	44	− 2.97	.88	3.38
		10	13.70	2.04	25	13.63	4.06	48	.07	.70	.10
		11	14.50	3.54	39	14.26	3.41	29	.24	.84	.29
		12	14.05	2.79	29	14.75	3.30	20	− .70	.90	.78
	TOTAL GIRLS		13.79	3.15	163	14.05	3.65	200	− .26	.36	.72
	BOYS & GIRLS		14.01	3.61	377	14.67	3.89	415	− .66	.27	2.44
Division III, Social Traits	Boys	6	24.08	8.88	26	24.79	5.14	14	− .71	2.19	.32
		7	21.45	5.32	22	22.78	6.12	25	− 1.33	1.67	.80
		8	22.56	5.16	32	24.83	6.33	36	− 2.27	1.38	1.65
		9	23.09	6.83	29	26.76	7.11	35	− 3.67	1.72	2.13
		10	23.00	5.00	24	25.59	6.49	44	− 2.59	1.42	1.82
		11	22.30	5.03	40	21.95	5.27	33	.35	1.20	.29
		12	24.01	7.02	41	22.64	5.68	28	1.37	1.56	.88
	TOTAL BOYS		22.98	6.01	214	24.38	6.36	215	− 1.40	.59	2.37
	Girls	6	22.95	5.46	11			5			
		7	26.50	7.11	18	19.27	3.68	22	7.23	1.83	3.95
		8	20.33	5.50	18	22.94	5.81	32	− 2.61	1.64	1.59
		9	21.80	5.87	23	22.82	6.55	44	− 1.02	1.55	.66
		10	21.34	6.00	25	22.31	5.50	48	− .97	1.42	.68
		11	21.96	4.43	39	21.84	7.03	29	.12	1.48	.08
		12	21.34	5.69	29	22.75	6.60	20	− 1.41	1.80	.78
	TOTAL GIRLS		21.59	5.61	163	22.26	5.76	200	− .67	.60	1.12
	BOYS & GIRLS		22.38	5.89	377	23.36	6.18	415	− .98	1.34	.73
Division IV, Emotional Traits	Boys	6	23.92	9.92	26	21.71	7.29	14	2.21	2.76	.80
		7	20.68	5.59	22	20.18	8.04	25	.50	1.99	.25
		8	21.41	5.91	32	25.42	8.75	36	− 4.01	1.78	2.25
		9	22.64	8.17	29	25.01	9.34	35	− 2.37	2.16	1.09
		10	21.75	7.00	24	23.38	7.26	44	− 1.63	1.80	.91
		11	21.88	6.53	40	23.59	7.36	33	− 1.71	1.64	1.04
		12	22.74	7.98	41	21.61	7.50	28	1.13	1.88	.60
	TOTAL BOYS		22.20	7.49	214	23.31	8.20	215	− 1.11	.75	1.48
	Girls	6	19.32	7.09	11			5			
		7	23.83	8.83	18	17.41	5.05	22	6.42	2.35	2.73
		8	19.67	6.67	18	20.28	5.81	32	− .61	1.87	.33
		9	20.20	7.73	23	20.20	6.95	44	0.00	1.91	0.00
		10	19.70	5.64	25	20.50	6.31	48	− .80	1.43	.56
		11	20.42	6.38	39	20.47	6.31	29	− .05	1.54	.03
		12	20.57	4.76	29	20.15	5.40	20	.42	1.49	.28
	TOTAL GIRLS		20.52	6.75	163	19.90	6.12	200	.62	.68	.91
	BOYS & GIRLS		21.48	7.25	377	21.67	7.47	415	− .19	.52	.37

[1] Small scores are "better," large scores "worse."
[2] A negative sign is used in this column to represent a difference in favor of the deaf.

study the question, "Are there group differences between deaf and hearing children in such aspects of personality as are measured by the incidence of undesirable behavior?" This schedule consists of a list of fifteen behavior problems which have been listed in the order of their frequency as reported for a group of elementary school children. In order to rate a child, the teacher places a cross in the appropriate column after each item, to designate how frequently such behavior has occurred in her experience with this child. High scores indicate the presence of numerous and serious problems and low scores, a few and less serious problems.

The scores for the deaf and hearing groups range from zero, representing the absence of behavior problems, to very high scores that are indicative of the presence of numerous and serious problems. The mean scores, the standard deviations, the mean differences between groups, the standard error of the difference and the critical ratios of the mean differences to their standard error, of the groups, by chronological age and sex, are given in Table 2. The mean scores for each age fluctuate irregularly between nine and 39 points. The girls, both deaf and hearing, tend to receive scores that are lower and more favorable than those received by the boys of both groups.

On most age levels, the deaf boys tend to receive higher and less favorable scores than their hearing controls. These mean differences of one to seven points, when compared in terms of the standard error of the difference, however, are statistically insignificant, for the critical ratios are low and range from .17 to 1.19. When all the ages are combined, the difference in favor of the hearing boys is less than two points and it is of no statistical significance.

With the exception of age seven, the deaf girls tend to receive behavior problem scores that are lower and more favorable than those received by their hearing controls. But, these differences are statistically insignificant, since the critical ratios are very low.

When the sexes are combined, the difference between the deaf and hearing groups is small and statistically insignificant. These results indicate that the differences between the

means of the deaf and hearing children on the incidence of undesirable behavior, as measured by Schedule A, The Behavior Problem Record, are negligible.

The standard deviations for the various distributions are very large and they are about as great as, or in many instances even greater than, the means. This indicates that there is a great deal of overlapping of the individual scores between the deaf and hearing children, for 67 per cent of the cases of a distribution fall between ± 1 standard deviation.

When the results of this study are compared with the Haggerty norms, the means of the total deaf and hearing boys correspond to the 79th percentile; the total deaf girls' mean is at the 79th percentile, while the total hearing girls' mean corresponds to the 84th percentile. When the sexes are combined, the means for both the deaf and hearing groups correspond to the 81st percentile. It is evident that while the scores for the deaf and hearing children are very similar, both groups present more behavior problems than the Haggerty-Olson-Wickman norm group.

2. Schedule B, The Behavior Rating Scale.—Schedule B of the Haggerty Behavior Rating Schedules was used in order to study the question, "Do deaf and hearing children differ on a variety of personal characteristics, which may be classified as intellectual, physical, social, and emotional traits?" This schedule consists of a graphic rating scale for each of 35 personal characteristics on a variety of traits, regardless of whether or not the behavior described would be called a behavior problem. High scores represent undesirable trait deviations, and low scores desirable deviations from the typical behavior of a group of school children.

The results obtained on Schedule B (Table II) for the separate ages range from mean scores of 65 to 88 points. There are wide irregular fluctuations from age to age. The differences between the means of the deaf and hearing groups at the various age levels vary considerably.

The deaf boys receive lower and more favorable mean scores at all age levels, except age twelve. While these differences are not reliable when all the ages are combined, the mean difference of 5.87 in favor of the deaf boys is statis-

tically significant, as is indicated by the critical ratio of 3.04.

With the exception of year ten, the mean differences between the deaf girls and their hearing controls are not significant. The critical ratio of 2.89, while not indicative of complete reliability, tends to show that the ten-year-old hearing girls receive better scores on Schedule B. When all the ages are combined, the mean difference between the deaf and the hearing girls is statistically insignificant.

When the sexes are combined, a small mean difference which is not statistically reliable is found in favor of the deaf children. There is a wide overlapping of individual scores and the results indicate that the individual differences within the deaf and hearing groups are greater than the differences between the deaf and the hearing.

A comparison of the Schedule B results of this study with the Haggerty norms reveals that the total deaf boys' mean corresponds to the 60th percentile, while the total hearing boys' mean corresponds to the 73rd percentile. The means for both the deaf and the hearing girls are at the 71st percentile. The means for the deaf and the hearing groups, sexes combined, correspond to the 72nd percentile. All the groups included in this study present more marked undesirable behavior deviations than the Haggerty-Olson-Wickman norm group. The deaf boys, however, present the smallest deviation from the norms.

3. Division I, Intellectual Traits.—To provide a more analytic study of the scores of Schedule B, it was divided into four groups of traits. This was done because it was realized that the composite score for the 35 traits of Schedule B might tend to conceal the diagnostic significance of the separate traits. Division I is composed of seven intellectual traits. High scores represent undesirable intellectual characteristics and low scores are indicative of favorable ones.

The results on Division I (Table II) indicate small fluctuations from age to age in the mean scores of the deaf and hearing children. The scores range from sixteen to 22 points. At all ages levels, the deaf boys are rated by their teachers as being more intelligent than are the hearing boys by their teachers. These mean differences, however, are not statisti-

cally significant. When all the ages are combined, the mean difference between the deaf and hearing boys is 1.95 points in favor of the deaf boys. This difference, while not very large, is nevertheless highly reliable and of statistical significance, since the critical ratio is 3.20. The comparison of the deaf and the hearing girls indicates that at no age level is there any significant differences between these groups. When the sexes are combined, the critical ratio of 5.13 indicates that the deaf are superior to the hearing groups on intellectual traits. This is largely due to the superior ratings received by the deaf boys. There is considerable overlapping of the individual scores received by the deaf and the hearing. The individual differences within the various deaf and hearing groups are found to be greater than the differences between the deaf and the hearing.

When compared with the published norms, the total deaf boys' mean corresponds to the 61st percentile and the total hearing boys' to the 65th percentile. Both the total deaf and hearing girls' means correspond to the 62nd percentile. In general, the means for the groups included in this study are slightly higher and more unfavorable than the means of the Haggerty norm groups.

4. Division II, Physical Traits.—This section of the Behavior Rating Schedule consists of seven physical traits. Low scores are indicative of favorable physical characteristics, while high scores represent undesirable deviations. An analysis of the results by age and sex is given in Table II. The means for the various ages and groups range from eleven to sixteen points. The deaf boys, as in Division I, receive slightly better ratings on physical traits than do the hearing boys. These differences, for any particular age level, are statistically insignificant. The critical ratios range from .71 to 1.75. When all the ages are combined, however, the mean difference of 1.57 points in favor of the deaf boys, though small, is reliable and statistically significant, as indicated by the critical ratio of 4.13. With the exception of the mean scores for age nine, the deaf and hearing girls do not differ significantly on physical traits. The critical ratio of 3.38 indicates that the nine-year-old-deaf girls are physi-

cally superior to their hearing controls. When all the ages are combined, the difference between the deaf and hearing girls is small and of no statistical significance. The total deaf and hearing groups, sexes combined, show a small and unreliable trend in favor of the deaf.

A comparison of these results with the Haggerty norms reveals that the total deaf boys' mean corresponds to the 62nd percentile, while the total hearing boys' mean is at the 81st percentile. Both the total deaf and hearing girls are at the 71st percentile. While the deaf and hearing girls are very similar to each other on physical characteristics, both groups are decidedly inferior to the norms for girls. The deaf boys are also somewhat inferior to the boys of the norm group. And the hearing boys compare the most unfavorably. The deaf and hearing children, in general, deviate unfavorably from the published norms of the physical traits of Division II.

5. Division III, Social Traits.—This section of Schedule B deals with ten social characteristics of the individual. As in the previous divisions of the Haggerty scale, high scores are indicative of undesirable deviations, while low scores show the possession of the more desirable social traits.

The results (Table II) indicate that the differences between the deaf and hearing boys at each age level are small and statistically insignificant. When all the ages are combined, while the deaf boys tend to receive slightly better scores on social traits than the hearing boys, the difference of 1.40 in their favor is so small that it is not very reliable. From these results, it is evident that the deaf and hearing boys differ very little in regard to social traits. Very similar results are found in the comparison of the deaf and hearing girls. With the exception of the seven-year-old deaf girls, who receive social trait scores which are higher (*i.e.*, more unfavorable) than those of the hearing controls, there is very little difference between the deaf and hearing girls on this trait. When the sexes are combined, the total deaf and hearing groups are not found to differ from each other on the social traits of Division III.

In general, the deaf and hearing children get scores that

are indicative of the possession of more undesirable social traits than the published norm groups. The total deaf boys' mean corresponds to the 62nd percentile, while the total hearing boys are in the 68th percentile. Both the total deaf and hearing girls correspond to the 74th percentile on the norms for girls.

6. Division IV, Emotional Traits.—Division IV, the last section of Schedule B, consists of eleven emotional traits. Low scores are indicative of emotional stability, while high scores are unfavorable deviations. The results (Table II), by age and sex, indicate very little difference between the deaf and hearing children. At no age level is there found any reliable, significant differences between the groups. The comparisons, in terms of the reliability of the difference between the means, indicate that the deaf and hearing children do not differ significantly on the emotional traits of Division IV.

A comparison of these results with the Haggerty norms reveals that the deaf and hearing children, in general, get higher and more unfavorable scores on the emotional traits. The total deaf boys' mean corresponds to the 70th percentile and the total hearing boys' to the 75th percentile. The total deaf girls' mean corresponds to the 77th and the total hearing girls' to the 74th percentile.

7. Influence of Sex.—Haggerty reports that the Behavior Schedules show sex differences. Boys tend to receive higher and less favorable scores than girls on each scale. There is, however, a wide overlapping of scores received by boys and girls. An examination of the results of the present study on deaf and hearing groups shows that the boys consistently received higher mean scores than the girls. The results were also analyzed to find out whether deaf boys and girls differ from each other, more or less, than hearing boys differ from hearing girls. The results, in terms of the reliability of the difference of the means of the total boys and girls are given in Table III. On Schedule A, the mean of the deaf boys is 10.87 points greater than that for the deaf girls. This difference is reliable and the critical ratio of 4.53 indicates a high degree of statistical significance. When the hearing boys

and girls are compared on Schedule A, a smaller difference of 6.98 is found between them. This difference has a fair degree of statistical significance; but the critical ratio of 2.85, while high, is not completely reliable.

Schedule B and its four subdivisions, show small and insignificant differences between the deaf boys and girls. This is found to be otherwise as far as the hearing children are

TABLE III

SEX DIFFERENCES ON THE HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCHEDULES

Haggerty Rating Scale	*Group*	*Boys*			*Girls*			$M_B - M_G$	SD_{diff}	*Critical Ratio*
		Mean	SD	N	Mean	SD	N			
Schedule A	Deaf	30.15	27.21	214	19.28	19.33	163	10.87	2.40	4.53
	Hearing	28.68	27.41	215	21.70	22.54	200	6.98	2.45	2.85
Schedule B	Deaf	75.85	18.93	214	71.60	15.90	163	4.25	1.79	2.37
	Hearing	81.72	21.22	215	71.57	16.88	200	10.15	1.87	5.43
Division I	Deaf	17.91	6.21	214	17.17	5.35	163	.74	.59	1.25
	Hearing	19.86	6.64	215	17.04	5.88	200	2.82	.61	4.62
Division II	Deaf	14.18	3.91	214	13.79	3.15	163	.39	.37	1.05
	Hearing	15.75	4.00	215	14.05	3.65	200	1.70	.37	4.59
Division III	Deaf	22.98	6.01	214	21.59	5.61	163	1.39	.60	2.30
	Hearing	24.38	6.36	215	22.26	5.76	200	2.12	.59	3.59
Division IV	Deaf	22.20	7.49	214	20.52	6.75	163	1.68	.74	2.27
	Hearing	23.31	8.20	215	19.90	6.12	200	3.41	.71	4.80

concerned. In every instance, the mean of the hearing boys is significantly higher than that of the hearing girls. The critical ratios range from 3.59 to 5.43 and all indicate a high degree of reliability.

These results indicate that the sex differences on Schedule A, The Behavior Problem Record, are large and statistically significant for both the deaf and hearing groups. The boys receive higher and less favorable scores. On Schedule B, The Behavior Rating Scale, and its four divisions of personal characteristics, the hearing boys differ significantly from the hearing girls. On these same measures, the differences between the deaf boys and girls are statistically insignificant.

8. Influence of Intelligence.—The relationship between the scores on the Haggerty Schedules and the Goodenough Intelligence Test scores was studied by means of the Pear-

son coefficient of correlation technique. Correlations ranging between —.151 ± .055 and .021 ± .055 were found between the deaf children's scores, and correlations from —.022 ± .055 to —.318 ± .050 for the hearing groups. All the correlations for both the deaf and hearing groups are very low and indicate that there is no significant relationship between the behavior scores and intelligence. These results are in accord with those reported by Olson (5, p. 46).

9. Influence of Age at Onset of Deafness.—The contingency method was used to study the relationship between the age of onset of deafness and the Haggerty Behavior Scores. Information in regard to the age at onset of deafness was available for 200 deaf boys and 150 deaf girls. The contingency correlations for the deaf boys ranged from .22 to .41 and for the deaf girls, the range is from .17 to .37. These relationships indicate that the older a child is when he becomes deaf, the larger and less favorable are his behavior rating scores. The contingency correlations, however, are not very large, and the validity and reliability of these relationships may be questioned. These results should be interpreted only as indicative of a positive trend in the relationship between the age of onset of deafness and the Haggerty-Olson-Wickman Behavior Rating Scores.

10. Influence of the Per Cent of Hearing Loss.—Pearson product-moment correlations were computed between the 3A audiometer hearing loss scores of 192 deaf boys and 158 deaf girls and their scores on the Haggerty Behavior Rating Schedules. Correlations ranging from —.082 ± .048 to .134 ± .047 for the deaf boys, and .084 ± .055 to .202 ± .053 for the deaf girls are found on these variables. These results indicate that the relationship between the per cent of hearing loss and the scores on the rating scales is very small and statistically unreliable.

11. Item Analyses of the Haggerty Behavior Schedules.—The individual items of the Haggerty scales were analyzed in order to discover in what situations there are the greatest differences between the deaf and hearing. Each item has a specific weight. The technique used for calculating the item differences was to find the means and sigmas for each item

for the deaf and hearing groups, and then calculate the significance of the mean differences in terms of the standard error of the difference. This was done for all the ages between six and twelve years combined, but the sexes were kept separated. Because of limitation of space, only the items on which a significant difference was found, will be reported in this article.

On Schedule A, the deaf boys presented more behavior problems than the hearing boys in regard to temper outbursts and stealing. The hearing boys were less interested than the deaf boys in their school work. Hearing children were more unnecessarily tardy, and stammered and stuttered more than the deaf children.

On the Behavior Rating Schedules, there was a slight tendency for the deaf children to receive better ratings than the hearing children. The deaf boys were superior on the following traits and characteristics: (1) more wide awake; (2) able to hold attention for long periods; (3) more mentally active; (4) make a more favorable impression with their physique and bearing; (5) their physical output of energy is greater; (6) personality is more attractive; (7) more cheerful and sympathetic; and (8) less suggestible. The hearing girls were more emotionally calm than the deaf girls.

The extent to which these trait differences were due to the bias of the teacher is difficult to determine. A halo effect was present in the ratings. Both the teachers of the deaf and the teachers of the hearing children were inclined to give their pupils ratings that were better than average. Each trait received a mean score of less than three on a five-point scale. This is especially noticeable in the ratings of the teachers of the deaf. There is a possibility that the teachers of the deaf are more sympathetic towards their handicapped pupils, and this may account for the slight tendency in favor of the deaf children's scores on the rating scales.

12. The Reliability of the Results on the Behavior Rating Schedules.—In the previous paragraph, it was pointed out that a halo effect was present in the teachers' ratings on the behavior trait scales. It was, therefore, thought best to de-

termine the reliability of the results on Schedule B, and to compare these results with those reported by Olson (5) in regard to the original standardization of Schedule B. The reliability was determined by the correlations between the halves of Schedule B. The total of the even-numbered items was correlated with the total of the odd-numbered items. Reliability coefficients obtained by this method vary between .75 and .85 for the deaf, and .85 and .89 for the hearing, for the correlations between the halves of the schedule. When the Spearman-Brown prophecy for the entire scale is applied, the correlations for the deaf vary between .85 and .91, and for the hearing, they are between .92 and .94. These results compare very favorably with Olson's results (5, p. 29) of .77 and .94 for the correlations between the halves, and between .87 and .97 for the Spearman-Brown prophecy for the entire scale. In general, it can be stated that the reliability of the teachers' ratings on Schedule B were very high and comparable with Olson's original reliability coefficients.

Summary and General Conclusions

The purpose of this study was to determine whether deaf and hearing children differ from each other on certain standardized scales, which measure various phases of personality. Teachers' ratings on the Haggerty-Olson-Wickman Behavior Ratings Schedules were obtained for 377 deaf and 415 hearing children between the ages of six and twelve, who are attending the public schools of New York City. The deaf and hearing groups were equated for age, sex, intelligence, general social status and nationality, and both groups were found to be comparable.

Schedule A, The Behavior Problem Record, was used in order to answer the question, "Are there group differences between deaf and hearing children in such aspects of personality as are measured by the incidence of undesirable behavior?" A comparison of the results of the deaf and hearing groups showed that the mean differences that were found were small and statistically insignificant. The amount of overlapping of individual scores between the groups was found to be very large, and the individual differences within

the deaf and hearing groups were greater than the difference between the deaf and hearing.

Schedule B, The Behavior Rating Scale, was used in order to answer the question, "Do deaf and hearing children differ on a variety of personal characteristics, which may be classified as intellectual, physical, social, and emotional traits?" The mean difference between the deaf and the hearing boys on Schedule B was found to be statistically significant. The deaf boys possessed more desirable personal characteristics than the hearing boys, though there was a large overlapping in the distribution of scores made by these groups. No significant differences were found between the deaf and hearing girls. When the sexes were combined, the deaf tended to receive more favorable scores than the combined hearing groups, but this difference was not reliable.

When the separate divisions of Schedule B were analyzed, it was found that the deaf boys were significantly superior to the hearing boys on intellectual and physical traits. Significant differences were not found to exist between the deaf and the hearing girls on these traits. No significant differences were found between any of the deaf and hearing groups on the divisions dealing with social and emotional traits. The amount of overlapping in the distribution of scores made by the deaf and the hearing groups on the four divisions of Schedule B was found to be very large, and the individual differences within any particular group were greater than the differences between the groups.

When the deaf and hearing children were compared with the Haggerty-Olson-Wickman standards, it was found that both groups presented more overt behavior problems and undesirable personal characteristics than children in general.

Sex differences on Schedule A, The Behavior Problem Record, were pronounced and statistically significant. Both the deaf and hearing boys received scores that were greater and less favorable than those received by the deaf and hearing girls. On Schedule B, The Behavior Rating Scale, and its four divisions of personal characteristics, the hearing boys received higher and less favorable scores that differed significantly from those received by the hearing girls. On these

same measures, the differences between the deaf boys and girls were small and of no statistical significance.

The relationship between the various Haggerty Behavior Rating Scores and the Goodenough Intelligence Test scores was found to be very small and negligible for both the deaf and hearing groups. The correlation coefficients varied from $.021 \pm .055$ to $-.318 \pm .050$.

The influence of the age at onset of deafness on the Haggerty-Olson-Wickman scores indicated that the older a child was when he became deaf, the greater and less favorable were his behavior rating scores. These results, however, were not sufficiently large to be indicative of anything except certain group trends. The contingency correlations ranged from .17 to .41. The amount of hearing loss of the deaf children, as measured by the 3A audiometer, did not have any relationship with the various behavior rating scores. The product-moment correlations for these variables varied from $-.082 \pm .048$ to $.202 \pm .053$.

An item analysis of the Haggerty Behavior Schedules indicated that there was very little difference between the deaf and hearing children. There was a tendency for the deaf children to receive slightly better scores than the hearing children. The extent to which this difference is due to the difference in attitude of teachers of deaf and hearing children cannot be said.

The reliability of the teachers' ratings was determined by the split-half technique. Corrected coefficients ranging from .85 to .94 were found. These results are comparable to those reported by Olson.

The general implications of the results obtained in this study would seem to indicate that the deaf children differ very little from their hearing control group in those phases of personality which the Haggerty-Olson-Wickman Behavior Schedules measure. In no way do the deaf children appear as a unique group on these behavior scales. Nevertheless, the contention of many educators that deaf children are poorly adjusted, is amply supported, at least, as far as the group studied is concerned. Both the deaf and the hearing children included in this study are more maladjusted than children

in general. Their scores on the various behavior rating scales indicate that they present more personality problems than the children of the Haggerty norm groups.

BIBLIOGRAPHY

1. Barr, F. E. *A Scale for Measuring Mental Ability in Vocations and Some of Its Applications.* Stanford University Press, 1918.
2. Goodenough, F. L. *The Measurement of Intelligence by Drawings.* World Book Co., Yonkers-on-Hudson, New York, 1926.
3. Haggerty, M. E. "The Incidence of Undesirable Behavior in Public School Children." *J. Educ. Research,* 1925, 21:102-122.
4. Haggerty, M. E., Olson, W. C., Wickman, E. K. *The Behavior Rating Schedules.* Manual of Directions. World Book Co., Yonkers-on-Hudson, New York. 1930.
5. Olson, W. C. *Problem Tendencies in Children.* The University of Minnesota Press, Minneapolis, 1930.
6. Symonds, P. M. *Diagnosing Personality and Conduct.* The Century Co., New York, 1931.
7. Wickman, E. K. *Children's Behavior and Teachers' Attitudes.* The Commonwealth Fund, New York, 1928.

An Experimental Study of the Comparative Rate of Utterance of Deaf and Normal Hearing Speakers

By CHARLES H. VOELKER, M.A.

Director of the Speech Clinic, Dartmouth College
Hanover, New Hampshire

ONE of the first impressions the visitor to a school for the deaf receives is that the speech of the pupils is slower than that of hearing speakers. This paper undertakes to investigate the exact speed of utterance of deaf pupils studying oral speech and to express the measure of their speech rate in terms of words spoken per minute. The rate of deaf and normal is established as well as possible for the process of discovering an index for comparison.

APPARATUS

The speech of each subject was picked up by a microphone and recorded on a permanent wax record, and at the same time through a second channel reproduced in light waves. These light flashes were photographed (1).

SUBJECTS AND MATERIALS

Deaf children in Grades One, Two and Three, of the Ohio School for the Deaf, were selected for this study of speech because in these grades the children not only have had from two to four previous years of phonetic instruction but in the

Grateful acknowledgment is here made of the aid and advice given, in the conduct of this study, by Dr. G. Oscar Russell of the Phonetics Laboratories at Ohio State University; Superintendent E. R. Abernathy of the Ohio School for the Deaf; Mr. R. F. Nilson, principal, and Miss Rose Marsh, speech supervisor, in the same school; Mr. R. H. Waltz of the Battle Creek, Mich., Special Education School; Dr. Virginia Saunderson of the Ohio State University Demonstration School; Prof. Marie K. Mason of the Department of Phonetics of Ohio State University: Mr. E. Goodsell of the same department, Mr. F. Rush, Mrs. Sullivan and Mr. R. Harrison, graduate students of the same department; and the following instructors in the Ohio School for the Deaf: Miss Anne Braningan, Miss Mary Dennis, Miss Genevieve Haren, Miss Elizabeth Hunter, Miss Jean MacDonald, Miss Elsie Schneider, Miss Elizabeth Scott, and Miss Maybelle Sekrya.

case of the particular school the pedagogical emphasis changes from that of speech over school subject to one where class subject material becomes the primary consideration and articulation secondary as in the grades beyond those selected. These pupils were at the time having the maximum of emphasis placed on their speech rehabilitation; more than they would receive at any time in the future in their whole educational curriculum through high school and college. Thus these children were considered to be in many ways in the best situation for such a comparative study (2).

The experimental activity was carried on in the Phonetics Laboratories at Ohio State University.

In order to determine the normal rate of speech, investigation was made of previous studies on speech rate by other workers. One investigator, Brigance, made a study of twenty "State" winners of oratorical contests who were competing in the Interstate Oratorical Association Contest. Brigance timed their addresses with a stop watch and determined the number of words from the published manuscripts. By this method, he found the rates varied from 83 words per minute to 154, and suggests that for the public type of presentation the best rate is from 115 to 135 words per minute (3).

Ewbank studied speech and especially the rate of delivery on the radio and concluded that radio speech was a bit more rapid than that in the presence of an audience (4).

A number of people have suggested what rate should be used on the radio. Goldsmith and Lescarboura suggest 175 words per minute for ordinary speech but 125 words per minute for statistics (5). Borden, after experimentation with different rates, determined a good average to be 165 words per minute (6). Johnson recommends three minutes for each page of typewritten double-spaced copy (7). This would average in the neighborhood of 100 words per minute. KAOC radio station recommends that a ten-minute talk should contain 1000 words (8). This would average 100 words per minute. Jackson advises 100 words per minute (9). Lawton studied student judgments of radio speakers and concluded that between 135 and 140 words per minute was a good average (10). The British Broadcasting Corpora-

tion which is directed by a board of phoneticians including such familiar names as Professor Lloyd James and the novelist, Bernard Shaw, suggests a rate of 120 words per minute (11).

There have also been studies of rates of utterance recorded directly from the radio, concerned with actual rates rather than suggested rates. The National Broadcasting Company tested its announcers' speed and found them to show a rate of 170 words per minute (5). The Columbia Broadcasting Company statisticians computed that their announcers demonstrated an average rate of 113 words per minute (12). An announcer at radio station KYW gave 240 words per minute (12). Lowell Thomas' rate was found to be 201 words per minute (13). Floyd Gibbons' average rate was computed at 180 words per minute (12). Lumley studied many types of radio speech and found the slowest type to be 107 words per minute and the fastest performer to speak at a rate of 201 words per minute. He found announcements of all sorts averaged 169 words per minute and radio talks of all sorts averaged 162 words per minute. The average for all speech performance sent out by radio on ether waves was found to be 160 words per minute (13).

The finding of such a variation as demonstrated above and in the accompanying tables under statistical results immediately illustrates without analysis that such studies cannot be used for comparison with the rate of the deaf speakers under this study's observation. It was thought wiser to have the same material spoken in the identical way by a control group for comparable results. The control group was made up of 1. hearing children the same age as the deaf group, 2. the deaf children's teachers, and 3. deaf pupils of oral phonetics. This permits comparison of similar length words, which in this case were monosyllabic with one exception, a necessarily faster type of speech than found in general speaking situations. And also there is possible comparison of a similar type of material—everyday expressions for the most part and as a result probably more rapid than complex radio speech.

Procedure

Each subject read into the microphone five sentences. These sentences were selected by Superintendent E. R. Abernathy of the Ohio School for the Deaf on the basis of familiarity to the pupils. They were:

1. Good morning.
2. How are you?
3. I am well thank you.
4. How old are you?
5. I am ten years old.

The teachers were acquainted with the nature of the experiment and as a part of their regular class exercise they taught these particular sentences specifically for several days before the pupils were transported to the Phonetics Laboratories for recording. Also immediately before the performance of each pupil the teacher coached him individually, and during the reading into the microphone the teacher directed the trials before the actual recording and during recording. Thus the subjects were at little disadvantage. Incidentally, being alone in a room with their teacher helped them to feel at home. The other subjects, *i.e.*, the control group, read the material into the microphone in trial performances before recording likewise.

The words recorded in the case of each subject were enumerated and tabulated from the audio-records. The visuo-records, or films, were measured from the beginning of speech to the end of speaking and the time recorded into the tabulation. The number of words uttered per minute was computed from the above information.

Statistical Results

TABLE I

Instructions for Rates of Radio Speech

Source	*Rate in Words per Minute*
British Broadcasting Corporation Instructions	120
Lawton Instructions	135-140
Jackson Instructions	100
K O A C Instructions	100 (approx.)
Johnson Instructions	100 (approx.)
Borden Instructions	165
Goldsmith-Lescarboura Instructions	
1. Ordinary Speech	175
2. Statistics	125

This table is adapted from the studies of other investigators and shows the rate of speech in terms of words spoken per minute each writer advised as the best for average speed of utterance for radio performance (14).

TABLE II

Speed of Radio Speech

Type of Utterance	*Rate in Words per Minute*
Lowell Thomas' Rate	201
Floyd Gibbons' Rate	180
A K Y W Announcers' Rate	240
N.B.C. Announcers' Rate	170
C.B.S. Announcers' Rate	113
Commercial Announcements	163
Sports Announcements	192
Musical Announcements	154
Pep Announcements	207
Opening Announcements	153
Closing Announcements	145
School Talks	170
News Talks	191
Educational Talks	160
Business Talks	146
Political Talks	107
Religious Talks	171
Miscellaneous Talks	199

This table is adapted from the results of other experimenters and shows just how rapidly the several speakers talked in terms of words spoken per minute (15).

TABLE III

RATE OF UTTERANCE OF DEAF SPEAKERS

Subject Number	*Words per Minute*	*Subject Number*	*Words per Minute*	*Subject Number*	*Words per Minute*
75	145.2	8	76.8	12	61.8
31	142.8	9	75.6	67	61.8
85	133.2	95	75.0	43	61.2
94	118.8	87	74.4	16	61.2
66	107.4	84	74.4	35	60.6
3	105.6	81	74.4	23	60.6
68	102.6	30	73.8	65	60.0
77	100.6	46	72.6	63	59.4
18	98.4	39	72.0	58	57.6
19	97.8	42	72.0	82	57.6
15	96.2	52	71.4	71	57.0
98	96.0	97	70.8	70	56.4
73	91.8	55	70.2	86	55.2
2	90.5	96	70.2	72	54.0
74	90.0	32	69.0	33	53.4
90	89.4	20	69.0	89	52.8
79	89.4	56	69.0	22	52.2
26	89.4	36	68.4	10	51.0
80	87.6	11	67.8	41	51.0
21	87.6	13	67.2	78	50.4
24	87.6	37	66.6	40	50.4
45	86.4	83	66.6	69	49.8
27	85.8	93	66.0	88	48.0
6	84.6	49	66.0	54	46.8
61	84.0	64	65.4	76	42.0
1	81.6	47	64.8	34	42.0
92	81.0	4	64.8	25	34.8
60	80.4	48	63.6	44	28.8
38	79.8	5	63.6		
57	79.8	62	63.6		
7	79.8	53	63.6		
50	79.8	59	63.0		
14	78.6	29	63.0		
91	78.6	17	62.4		
51	77.4	28	61.8		

This table shows the number of words spoken per minute by deaf children as an index of their rate of utterance. The subject numbers are merely for identification of the pupils.

TABLE IV

RATE OF UTTERANCE OF NORMAL HEARING SPEAKERS

Subject Number	*Words per Minute*
1	210.0
13	208.8
9	201.6
7	186.0
12	183.6
11	169.8
10	164.4
3	162.0
2	147.6
6	144.6
5	139.2
4	135.0
8	134.4

This table shows the number of words spoken per minute by subjects with normal hearing acuity. They are made up of normal hearing children the average age of the deaf children in Table III, of teachers of the deaf children on Table III and of students of phonetics specializing in the rehabilitation of the deaf through the oral curriculum. These figures are an index of normal speech rate for the selected material of for the most part common monosyllabic words in everyday expressions. The subject numbers are merely for identification.

TABLE V

COMPARATIVE RATE OF UTTERANCE OF D AF AND NORMAL HEARING SPEAKERS

Type of Rate	*Normal Words per Minute*	*Deaf Words per Minute*	*Difference Words per Minute*	*Per Cent*
MEAN	164.4	69.6	94.8	136.2
AVERAGE	168.2	67.4	100.8	149.6
FASTEST	210.0	145.2	64.8	44.6
SLOWEST	134.4	28.8	105.6	366.7

This table shows the difference between the MEAN, AVERAGE, SLOWEST, and FASTEST rates of the deaf and normal hearing groups. It indicates that the normal group talks about one and one-half times faster than the deaf group. The fastest speaking normal hearing subject spoke half again more rapidly than the speediest deaf speaker, and the slowest normal spoke almost three and one-half times more words per minute than the slowest deaf pupil.

TABLE VI

THE COMPARATIVE DIFFERENCE BETWEEN THE AVERAGE, FASTEST, AND SLOWEST RATES OF SPEECH OF DEAF AND NORMAL HEARING SUBJECTS

	Words per Minute	
Difference for Comparison	*Normal Group*	*Deaf Group*
Fastest and Slowest	75.6	116.4
Fastest and Average	41.8	77.8
Slowest and Average	33.8	38.6

This table shows the dispersions on the three possible comparisons. It will be noted that in the first two instances the spread of the deaf group is considerably wider than that of the normal hearing group and that this is mostly in relation to the degree of rapidity above the average.

RESULTS

It was found that the mean rate for the normal group was 164.4 words per minute which was faster than the mean rate of the deaf, 69.6 words per minute. There was a difference of 94.8 words per minute for the mean rate between the deaf and the normal. The normal group uttered, in the mean, 136.6 per cent more words per minute than the deaf.

The fastest speaking normal spoke 210.0 words per minute in comparison to the fastest deaf rate of 145.2 words per minute, *i.e.*, a difference of 64.8 words per minute. That is to say, the fastest normal spoke 44.6 per cent more words per minute than the fastest of the deaf. Although this figure shows the normal to be about half-again as rapid as the deaf maximum rate, a comparison of the fastest deaf speaker with the slowest normal would indicate on the contrary that this pupil spoke the more rapidly by 10.8 words per minute.

The slowest speaking normal spoke 366.7 per cent faster than the slowest utterance of a deaf subject, making a difference of 105.6 words per minute. The rate of the slowest normal was 134.4 words per minute. The speed of the slowest deaf was 28.8 words per minute.

The average rate of the deaf group was 149.6 per cent slower than the average for the control group. The deaf average was 67.4 words per minute; the normal average was 168.2 words per minute. The difference between the deaf and normal averages was 100.8 words per minute.

This normal average was 484.0 per cent faster than the

rate of the slowest deaf speaker, *i.e.*, almost five times faster.

The fastest deaf speaker was only 15.8 per cent slower than the normal average.

The difference between the slowest and fastest speaker was computed for each group. It was found that the spread of the deaf group was 54.0 per cent wider than that of the control group.

The difference between the fastest speaker and the average for the particular group was found to be 86.1 per cent wider for the deaf group.

The spread between the slowest speaker and the average of the specific group was derived. This demonstrated that the spread for the deaf was 14.2 per cent wider than for the normal hearing group.

Conclusions

These results correlate with and confirm the results of Hudgins. Using the kymographic method in a study of the speech co-ordinations of 62 deaf subjects and 25 normal hearing subjects for comparative purposes, Hudgins found in regard to the deaf among other things, "extremely slow and labored speech" (16). The present study indicates that the deaf speak substantially slower than normal hearing people.

It is to be concluded that the deaf tend to speak almost 150 per cent slower than normal hearing people as demonstrated by this study.

It might be interesting to set up by hypothesis some pedagogical goals in regard to speech rates based on general types of utterance. Although more than one fourth of the deaf cases spoke 80 or more words per minute, it is believed generally that this rate is rather slow, slow enough to be tiresome, however frequently it may be used in non-public speech. But 80 words per minute might serve as a compromise minimum objective in the teaching of the deaf. Ninety words per minute might be a better goal because even Brigance has heard excellent and delightful speakers talk at this rate (3). Over 15 per cent of the deaf subjects in this study spoke 90 or more words per minute. From the above

radio studies, it would seem that the 8.2 per cent of the deaf group who used more than 100 words per minute might well be considered normal without a doubt in regard to speech rate.

Bell once stated, "Ordinary people who know nothing of phonetics or elocution have difficulty in understanding slow speech composed of perfect elementary sounds, while they have no difficulty in comprehending an imperfect gabble if only the accent and rhythm are natural." (17) and "I have found in my past experience that accent is length." (18)

For further verification of this tenet, it might be well to state that this has also been found advisable in the case of mongoloid diagnostic speech education. The mongol, who can not be taught a perfectly precise articulation, renders an approximately utilitarian utterance when the appropriate intonation and inflection of the *dramatic* speech situation is reproduced regardless of articulation nicety. The emphasis on speech-melody lends them a deceivingly accomplished ability and naturalness in speech, and as a resultant, psychologically, a completely normal reaction to speech situations (19).

It might be concluded from this study that it is possible for the deaf to speak more closely to the *normal* rate, not necessarily maintaining other things equal. And it would seem to be indicated that pedagogically there might be more emphasis placed on an increased speed of utterance in the oral education of the deaf.

BIBLIOGRAPHY

1. Voelker, C. H. "A Preliminary Strobophotoscopic Study of the Speech of the Deaf." *American Annals of the Deaf,* 1935, 80:243-259.
Tiffin, J. *Phonophotographic Apparatus.* University of Iowa Studies in the Psychology of Music, 1932, Vol. I.
Metfessel, M. & Tiffin, J. "Application of the Neon Lamp to Phonophotography." *Amer. J. Psychol.,* 1930, 42:638.
Metfessel, M. "Technique for Objective Studies of the Vocal Art." Psychological Monographs, 1926, 36:1-40.
———. "The Strobophotograph." *J. General Psychol.* 1926, 2:135-139.
Seashore, C. E. *The Vibrato.* University of Iowa Studies in the Psychology of Music, Vol. I.
2. Voelker. C. H. *An Investigation of Vibrato in Voices of the Deaf.* Speech Monographs, 1935, 1:150-151.

3. Brigance, W. N. "How Fast Do We Talk?" *Quar. J. Speech,* 1926, 12:337-342.
4. Ewbank, H. L. "Studies in the Technique of Radio Speech." *Quar. J. Speech,* 1932, 18:560-571.
5. Goldsmith, A. N. & Lescarboura, A. *This Thing Called Broadcasting.* New York, 1934.
6. Borden, R. C. *The Principles of Effective Radio Speaking.* Modern Eloquence, 1927, 2nd Supp., pp. 9-17.
7. Johnson, L. J. *Radio Broadcast,* 1927, p. 269.
8. K O A C Instructions to Announcers and Speakers. 1928.
9. Jackson, J. H. *Sunset,* 1925, pp. 22-23.
10. Lawton, S. P. "Principles of Effective Radio Speaking." *Quar. J. Speech,* 1930, 16:225-277.
11. Sprott, E. *Education on the Air.* Ohio State University Press, Columbus, 1932.
12. *Broadcast Advertising,* 1931, 4:12.
13. Lumley, F. H. "Rates of Speech in Radio Speaking." *Quar. J. Speech,* 1933, 19:393-403.
14. See 5, 6, 7, 8, 9, 10, and 11.
15. See 5, 13, 14, 15.
16. Hudgins, C. V. "Comparative Study of the Speech Co-ordinations of Deaf and Normal Subjects." The Pedagogical Seminary and *J. Genet. Psychol.,* 1934, 44:3-48.
17. Bell, A. G. *The Mechanism of Speech.* New York, 1916, p. 15.
18. *Ibid.,* p. 77.
19. Voelker, C. H. "Dyslogia in Mongolism." Proceedings of the American Speech Correction Association, 1935, 5:31-34.
———. "Further Clinical Research on Dyslogia Mongolia." Proceedings of the American Speech Correction Association, 1936, 6:38-43.
———. "Prophylactic Technic for Spasmophemia in Mongols." *Amer. J. Orthopsychiatry,* 1936, 6:440-441.
———. "Therapy of the Endocrinopathic Dyslogia in Cretinism." *Amer. J. Orthopsychiatry,* 1935, 5:64-65.

Miscellaneous

I. S. F.

Preliminary Announcement of the Next Meeting of the Convention.—A letter from Dr. Ignatius Bjorlee, president of the Convention of American Instructors of the Deaf, announces that by unanimous vote of the executive committee, the date set for the 1939 meeting of the Convention at Berkeley, California, will be from June 18 to 23, inclusive.

Although the official call will appear in the September number of the ANNALS, it was felt that this advance statement should be made in order that superintendents and teachers may so arrange their schedules as to conform, if possible, with the Convention dates.

Principal E. A. Stevenson of the California School, who will serve as host to the Convention, advises that a later date could not be selected in view of the fact that dormitory accommodations must be made available for the summer school at the University of California, which will open one week following the close of the Convention meeting.

Certification.—Applications for certification under the Conference continue to come in at a steady rate. New names, bringing the total number of applicants to 858, are the following:

Bessie Lee Allman, Texas School
Maxine Tull Boatner, West Hartford, Conn.
Ada Blocker, Texas School
Margaret Eleanor Bruns, California School
Carmalette Marie Campbell, Ohio School
Marjorie Casey, Manitoba School
Eudora Jeanette Creath, Texas School
Ruth Van Male Dedrick, Westport, Conn.
Sylvia Jeanne Elgutter, Louisiana School
Emily Lucille Farrow, Texas School
M. Genevieve Haren, Ohio School
Lucretia Parsons Myers, State School, Newport News, Va.
Katherine McCoy Newland, Indiana School
Rosina Jane Norsworthy, Louisiana School

Maude B. Goodwin Nurk, New York School
Donaldina Patterson, Oregon School
Marion Stamper Roberts, Louisiana School
Zilphia Odom St. Amant, Louisiana School
Keyes Danforth Sanders, Austine School
Marion Peterson Sanders, Austine School
Bernard Rudolph Snodgrass, Ohio School

Miss Kent's "Suggestions for Teaching Rhythm to the Deaf."—The text on rhythm work, entitled "Suggestions for Teaching Rhythm to the Deaf," by Miss Margaret S. Kent of the Maryland State School, has been issued as a reprint edition. The first edition was printed in 1934 and the entire output of approximately one thousand copies was disposed of a year ago. With a considerable number of orders on hand and because of the many letters of appreciation, it was felt that the profession would be benefited by a second printing.

For those who have not as yet made acquaintance with this attractive manual, it should be said that it covers its field in both a thorough and helpful manner. After outlining the growth of the rhythm movement in schools for the deaf, the aims of this type of work, the natural order of procedure and its relation to auricular training, it lays down in detail the technique and materials employed and gives exercises to develop tactile perception of sound in all its differentiations, and to build voice. A section is devoted to the development of accent, with a copious supply of exercise material. Other sections deal with song teaching, including exercises, the percussion orchestra, dances, and an extensive bibliography.

This new edition retains the earlier attractive format and clear printing. It sells at fifty cents per copy, there being no idea of any financial gain in connection with it. Orders should be sent to the Maryland State School for the Deaf, Frederick.

Mr. Haycock's "The Teaching of Speech."—One of the most valuable of the publications of the National College of Teachers of the Deaf in England, "The Teaching of Speech" by Mr. G. Sibley Haycock, present superintendent of the Langside School for the Deaf in Glasgow and previously for

many years principal of the Training College for Teachers of the Deaf, Fitzroy Square, London, was last year issued in a reprint edition.

This book, an outstanding treatise on the program of speech work for deaf children, furnishes for the classroom teacher a complete working source for almost every aspect of this difficult field. It comprises three major sections: 1. Natural Speech, on "How best to promote the quality of naturalness in the speech of the deaf," the 1928 Braidwood Medal Prize Essay; II. Speech Sounds, their classification, production and development; common faults and their correction; and III. Intelligible Speech; how to obtain and maintain this quality of speech throughout a school.

This book is in every way a valuable guide for the work of the teacher of speech, and the labors here reported by Mr. Haycock can be turned to profit wherever work on speech with deaf children is attempted. Its 302 pages offer a reservoir of illustrative and drill material. The book may be obtained from the publishers, Messrs. Hill and Ainsworth, Ltd., Glebe Street, Stoke-on-Trent, England, at 7/6 per copy, post free.

Special Summer Courses for Teachers of the Deaf.—A wealth of opportunity for training in methods of teaching deaf children, under guidance of leaders in the profession, is available for the coming summer. These special courses are being offered at a number of noted educational centers.

The 1938 Summer School of the American Association to Promote the Teaching of Speech to the Deaf will be held at Wayne University in Detroit from July 2 to August 12. A catalogue and announcement may be obtained by writing to Professor John J. Lee, general adviser.

Teachers College, Columbia University, through its Department of the Education of the Handicapped, offers a six weeks' program of advanced courses in the education of the deaf, beginning July 6 and ending August 13. Further information may be obtained from the Office of the Secretary, Teachers College, Columbia University, New York City.

In its Summer Session, June 27 to August 5, the Depart-

ment of Special Education of Michigan State Normal College, at Ypsilanti, features courses for teachers of the deaf and the hard of hearing and for persons desiring to learn speech reading. Inquiry concerning these courses should be addressed to Professor Charles M. Elliott, director.

As part of the cooperative program in the preparation of teachers of the deaf of the St. Mary's School for the Deaf and the University of Buffalo, two specialized courses are offered this summer, one in practicum on teaching of the deaf, and the other on mental, social and vocational adjustment of the handicapped. The session will continue from July 5 through August 13, and information regarding it may be obtained by writing the Principal, St. Mary's School for the Deaf, 2253 Main Street, Buffalo, N.Y., or Dean of the School of Education, the University of Buffalo, Buffalo, N.Y.

LANGCROFT

A Summer Camp for Boys With Impaired Hearing

CLEARWATER LAKE, DEERWOOD, MINNESOTA

LangCroft Camp is located in northern Minnesota on the shore of beautiful Clearwater Lake. It is devoted exclusively to the welfare of boys with impaired hearing, ages 8-20. Over a hundred acres of dense woodland provide an excellent opportunity for nature study. LangCroft has a half mile of shorefront, with a safe private sand beach. The buildings include a main lodge, crafts building, guest cabin and three large sleeping cabins.

The program offers swimming, canoeing, sailing, tennis, archery, handcrafts, croquet, nature study, campfire programs and horseback riding.

Individual instruction is given in Speech Reading and Speech Correction. Tutoring in any subject also available.

The staff consists of experienced counselors who are now teaching in schools for the deaf, three former Scoutmasters of schools for the deaf, a registered nurse, a visiting otologist and a camp physician.

Enrollment is limited to thirty-five boys. For catalog write V. A. Becker, Kendall Green, Washington, D.C.

STRAIGHT LANGUAGE FOR THE DEAF

BY EDITH FITZGERALD

Third Edition (Revised) Price, $3.15 postpaid.

Order from

THE STECK COMPANY, Austin, Texas

LOGICAL SYSTEM OF LANGUAGE-TEACHING
and
AN ANALYSIS OF THE ENGLISH LANGUAGE
(A Manual for Teachers)

By MARIETTA RECTOR VINSON
Instructor in the California School for the Deaf

THE BOOK

Is a textbook for teachers of the English language.
Is of particular value to teachers of the deaf.
Is self-explanatory and easily comprehended.
Presents, for the first time, the English language on a subject basis.
May be used in language-teaching in any grade.
Is a source of material essential to the teacher of language.

THE BOOK CONTAINS

A new system and a special device for language-teaching.
An analysis of the English language from the standpoint of language-teaching.
The grammar necessary to an intelligible analysis of language.
Distinctive vocabulary associated with language principles.
Charts which present a column system with no confusing adjustments.
A section devoted to Drill Work.
A nine-year graded course of study in language. Of particular value to teachers in schools which do not supply such a course.

The system is grammatical and thorough.

So-called language principles are given in the various constructions to which they belong; also the vocabulary associated with each use.

Uniformity of application is assured by the presentation of the system in conjunction with language principles throughout the book.

The columns may be used independently, although transition to the use of symbol sentence forms is recommended and indicated in conjunction with language principles.

The symbol sentence forms make clear to the deaf pupil many facts connected with language for which columns are inadequate.

The symbols represent the classification words with which they are associated.

Over 300 pages. Full Vellum Bound. Page size 10 x 6¼ in.

Price, $6.00 postpaid.

Discount—A discount of 20% is given on orders for five or more copies.

Send orders and inquiries to M. Vinson, P.O. Box 236, Berkeley, Calif.

OUTLINE OF LANGUAGE WORK

BOOK I, Revised

With Methods of Presentation of the Work of the First, Second, Third and Fourth Years.

Price per copy, $2.50

Send orders to

EDITH M. BUELL
15 Prescott Avenue, Bronxville, N.Y.

BOOKS FOR USE IN SCHOOLS FOR THE DEAF

English Book I, for Upper Primary Grades..... $ .60
English Book II, for Intermediate or Grammar Grades..... .60
English Book III, for High-School Grades, and a self-instructor.... .75
First Lessons in Geography, by Grace M. Beattie of the Colorado School 1.00
English Phrases and Idioms, by Dr. J. L. Smith of the Minnesota School 1.60

Published by the State School for the Deaf, Columbus, Ohio

THE BARRY FIVE-SLATE SYSTEM

One of the Best and Most Scientific Systems of Teaching Language to Deaf Children

PRICE $2.50 NET

Send Orders to

THE COLORADO SCHOOL FOR DEAF AND BLIND
COLORADO SPRINGS, COLORADO

BOOKS FOR THE DEAF

By MARGARET J. STEVENSON

THE LIFE OF JESUS (Revised)
For Primary Classes. Cloth; Price, 30 cents net.

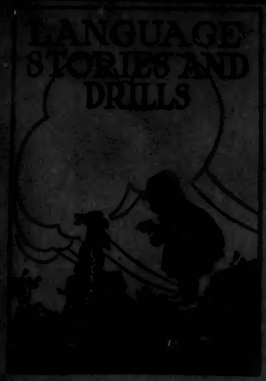
PRIMARY GEOGRAPHY, NUMBER I (Revised)
Cloth; Price, $1.00 net

PRIMARY GEOGRAPHY, NUMBER II
Cloth; Price, $1.00 net

NATURE FACTS (Revised)
Used correlatively with Primary Geographies.
Cloth; Price, 80 cents net

Send All Orders Direct To

MARGARET J. STEVENSON, OLATHE, KANSAS



"Language Stories and Drills"

Books I, II, III and IV

Gertrude W. Croker, Mabel K. Jones and M. Evelyn Pratt

Illustrated by Tony Sarg

Price per copy, $1.25

Teachers' Manuals, $.50 Postage not included

Send orders to

CROKER, JONES & PRATT
Public School 47, 225 East 23rd St.
New York City

MIAMI SCHOOL FOR DEAF CHILDREN

Specializing in Teaching Speech to the Totally Deaf from Three Years of Age by a Novel Method described by Dr. Max F. Meyer in his Book "FITTING INTO A SILENT WORLD,—The First Six Years of Life" published by the University of Missouri Press, April 1934 ($1.25)

Florida Climate—No Smoke—No Acid Air—No Dust—Same Temperature All Seasons—Outdoor Life—Best Medical Service—Open 52 Weeks of the Year—Entrance Any Day—Moderate Cost—Educational Supervision by Dr. Max F. Meyer

Address: MIAMI SCHOOL FOR DEAF CHILDREN,
The University of Miami, Coral Gables, Florida

"TALKS AND STORIES"

Contains nearly a hundred short stories and seventy-five conversations for practice in language, prepared by William G. Jenkins, M. A. Single copy, 50c.

"WRITTEN EXERCISES ON DIRECT AND INDIRECT QUOTATIONS"

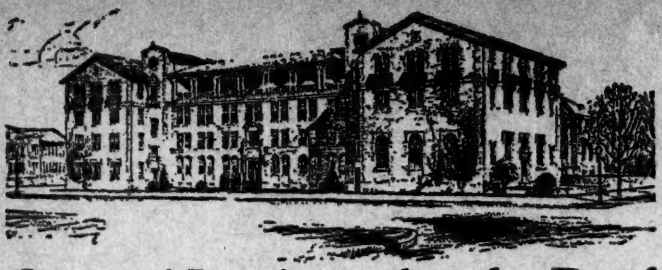
By J. Evelyn Willoughby, late instructor in the Clarke School. Single copy, 40c.

"THE STORY OF AMERICA FOR LITTLE AMERICANS"

By Grace M. Bleyer, Instructor in the Colorado School. New Edition. Price, single copy, $1.00.

Published by the

AMERICAN SCHOOL FOR THE DEAF, West Hartford, Conn.



Central Institute for the Deaf

NATIONAL RESIDENTIAL AND DAY SCHOOL
FOR THE DEAF AND DEFECTIVES IN SPEECH

Approved by Advisory Council of Foremost Ear Specialists and Educators

New fire-proof buildings beautifully located opposite Forest Park. Modern Dormitories and Equipment. Best home environments. Pupils constantly in care of teachers or experienced supervisors.

Oral School for Deaf Children. C. I. D. offers all advantages of exclusively Speech Training and daily expert medical supervision of both Resident and Day Pupils. Education and Training from Kindergarten (three years of age) to College.

Classes for Hard-of-Hearing Children. A new department has been established for the special training of Hard-of-Hearing children in Lip-Reading and Speech; all grades. Salvaging of Residual Hearing is a specialty of the Institute. The Acoustic Method was created here.

Lip-Reading Instruction for Adults. Private and Class Instruction for the adult deaf. Conversational Classes for advanced pupils.

Correction of Speech Defects. Correction of Imperfect Phonation, Indistinct Articulation, Lisping, Stuttering, Stammering and Aphasias.

Teachers' College. This department of the Institute is a Unit of Washington University and accepts applicants with adequate college qualifications. Two years' training with graded special curriculum constitutes the training course. Graduates receive degrees of Bachelor of Science in Education from Washington University.

For further information address

Dr. Max A. Goldstein, Director - - - Miss Julia M. Connery, Principal

818 S. KINGSHIGHWAY, ST. LOUIS, MO.

WAYNE

DETROIT'S MUNICIPAL UNIVERSITY

The 1938 Summer School of The American Association to Promote the Teaching of Speech to the Deaf Will Be Held at Wayne

Credit Will be Granted for All Graduate and Undergraduate Courses

EXTENSIVE COURSE OFFERINGS
A STRONG FACULTY

The American Association Will Hold Its Annual Summer Convention at the Detroit Day-School for the Deaf—June 27 to July 2

Detroit Is Making Extensive Plans for Both the Convention and the Summer School

Summer School—July 2 to August 12

For Catalogue, Announcements and Further Information Write to
JOHN J. LEE, GENERAL ADVISER

GEORGE BANTA PUBLISHING COMPANY, MENASHA, WISCONSIN